

**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING
(COMPUTER AIDED MANUFACTURING)**

Term-End Examination

December, 2012

BME-031 : ENERGY CONVERSION

Time : 3 hours

Maximum Marks : 70

Note : Answer (7) questions. Use of scientific calculator is permitted. Suitable data may be assumed if required.

1. (a) Define power. Explain Electro mechanical energy conversion with the help of block diagrams. 5
- (b) Explain cycle of operation of a 2-stroke engine. 5
2. (a) Explain photo-electric energy conversion system with a neat sketch. 5
- (b) Which part of Nuclear Power plant is called as the heart of the plant ? What is the function of it? Explain with a neat sketch. 5
3. (a) What do you mean by calorific value of fuel ? Explain ? 5
- (i) Gross calorific value
- (ii) Net calorific value

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| | (b) | What is wind energy ? Explain with a sketch wind energy power plant. | 5 |
| 4. | (a) | Explain solar-steam generating system using parabolic concentrating collector. | 5 |
| | (b) | Explain with a neat sketch principle of working of, | 5 |
| | (i) | Impulse steam turbine. | |
| | (ii) | Reaction steam turbine. | |
| 5. | (a) | Give the classification of steam condensers. | 4 |
| | (b) | Explain with a neat sketch counter flow jet condenser. | 6 |
| 6. | | How does the overall efficiency of combined gas turbine power plant improve using reheat, regeneration and intercooling together? Explain with PV diagram. | 10 |
| 7. | (a) | What is catalytic cracking ? Explain moving bed type catalytic cracking. | 4 |
| | (b) | Explain the following, | 6 |
| | (i) | Law of conservation of energy. | |
| | (ii) | Dalton's law. | |
| | (iii) | Amagat's law. | |

8. (a) Explain the following laws of thermochemistry, 5
- (i) Law of Lavoisier and Laplace.
- (ii) Hess's law of constant heat summation.
- (b) Explain with a neat sketch Velox boiler. 5
9. (a) Explain fluidised bed combustion system of boilers. 5
- (b) What is the difference between fire tube and water tube boilers. 5
10. With a neat sketch explain Hydro-electric power plant. 10
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