Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **16ME1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MECHANICAL MACHINES AND SYSTEMS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | | | | **Course outcome** | **Marks** |
| **PART-A (40X1=40 MULTIPLE CHOICE QUESTIONS)** | | | | | | |
| 1. | The process of breaking up a liquid into fine droplets by spraying is called\_\_\_\_\_\_\_\_\_ | | | |  |  |
|  | a. Atomization | b.Vaporization | c. Ionization | d.Carburetion | CO1 | (1) |
| 2. | A two stroke engine can be identified by | | | |  |  |
|  | a. Cooling system | b. Cylinder size | c. Lubrication system | d. Absence of valves | CO1 | (1) |
| 3. | At the same speed two stroke engine of the same size as a four stroke engine will develop \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. twice the power | b. same power | c. half the power | d. four times the power | CO1 | (1) |
| 4. | \_\_\_\_\_\_\_\_\_\_\_\_ shaft is used to open and close the valves in four stroke engine. | | | |  |  |
|  | a.crank shaft | b. camshaft | c.piston rod | d. clutch | CO1 | (1) |
| 5. | During the exhaust stroke the pressure in the engine cylinder is ----------------- atmospheric. | | | |  |  |
|  | a. equal | b.above | c.below | d.none | CO1 | (1) |
| 6. | The refrigerant which comes out of throttle valve is \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. low pressure liquid | b. high pressure liquid | c. high pressure vapour | d. low pressure vapour | CO2 | (1) |
| 7. | Which system is less noisy in operation? | | | |  |  |
|  | a. Gas refrigeration | b. Vapor Compression refrigeration | c. Vapor absorption refrigeration | d. None | CO2 | (1) |
| 8. | The boiling point of a liquid increases with the \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Decrease of pressure | b.Increase of pressure | c.Atmospheric pressure | d.Absolute pressure | CO2 | (1) |
| 9. | The outdoor unit of a split AC are \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. compressor | b. condenser and expansion valve | c. compressor, condenser and expansion valve. | d. evaporator | CO2 | (1) |
| 10. | In a centrifugal pump, the liquid enters the pump \_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. At the centre | b. At the bottom | c. At the top | d. From sides | CO2 | (1) |
| 11. | In a diesel power plant fuel from the storage tank is pumped in to a smaller tank known as\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. surge tank | b. day tank | c.petrol tank | d.head tank | CO1 | (1) |
| 12. | Impulse turbine is also called as \_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Pressure turbine | b. Force turbine | c. Velocity turbine | d. Reaction turbine | CO1 | (1) |
| 13. | An engine or machine which derives \_\_\_\_\_\_\_\_\_\_\_\_\_ from the fuel and converts this into \_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Thermal energy, potential energy | b. Potential energy, thermal energy | c. Kinetic energy, thermal energy | d. Heat energy, mechanical work | CO1 | (1) |
| 14. | The water tube in a Babcock and Wilcox boiler are \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. horizontal | b. Vertical | c. Inclined | d. Straight | CO1 | (1) |
| 15. | Cochran boiler is a \_\_\_\_\_\_\_\_\_\_\_ boiler. | | | |  |  |
|  | a. Horizontal fire- tube | b. Horizontal water- tube | c. Vertical water – tube | d. Vertical fire – tube | CO1 | (1) |
| 16. | In order to generate the required quantity of power in a hydroelectric power plant \_\_\_ | | | |  |  |
|  | a. pressure to be maintained constant | b. sufficient height of water column must be maintained | c. sufficient pre heating is done | d. sufficient size of the turbine blades should be maximum | CO1 | (1) |
| 17. | The function of regenerator in a gas turbine plant is \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. To heat the compressed air from the compressor | b. To make sure that further compression is possible | c. As the power needed to compress the air is reduced | d. As the air undergoes compression when cooled | CO1 | (1) |
| 18. | Since the diesel power plant is not a self-starting power plant, what is used for starting purpose. | | | |  |  |
|  | a. started using a motor run by electricity. | b. steam compressor | c. water from a nozzle | d. air compressor | CO1 | (1) |
| 19. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used to preheat the incoming air before it enters the furnace of the boiler in steam power plant. | | | |  |  |
|  | a. Economiser | b. Air preheater | c. Turbine | d. Condenser | CO1 | (1) |
| 20. | One gram of uranium will produce energy equivalent to approximately \_\_\_\_\_\_\_\_\_ tonnes of high grade coal. | | | |  |  |
|  | a. 1000 | b. 1 | c.100 | d. 4500 | CO1 | (1) |

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| 21. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ separates the tidal basin from the sea. | | | |  |  |
|  | a. Barrage | b. Pump house | c. Surge tank | d. Aerogenerator | CO1 | (1) |
| 22. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy is the energy which a substance has due to its position or state. | | | |  |  |
|  | a. Potential | b. Kinetic | c. Chemical | d. Heat | CO1 | (1) |
| 23. | The working fluid in ocean thermal energy conversion power plant is \_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Diesel | b. The liquid ammonia | c. Mercury | d. Water | CO1 | (1) |
| 24. | In a gas turbine 60% of the power developed is utilised to run \_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Compressor | b.Combustion chamber | c.Vacuum chamber | d. Steam generator | CO1 | (1) |
| 25. | \_\_\_\_\_\_\_\_\_\_ is used to separate the steam and water in geothermal powerplant. | | | |  |  |
|  | a. Heat drum | b. evaporator | c. Condenser | d. Water pump | CO1 | (1) |
| 26. | The temperature at which the new grains are formed in the metal is called \_\_\_\_\_\_\_ | | | |  |  |
|  | a. Recrystallisation temperature | b. Lower critical temperature | c. Upper critical temperature | d. Eutectic temperature | CO3 | (1) |
| 27. | The adhesiveness is the property of a sand due to which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. It cling to the sides of a moulding box | b. It evolves a great amount of steam and other gases | c. The sand grains stick together | d. Withstands high temperature | CO3 | (1) |
| 28. | Riddle is used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Cleaning the moulding sand | b. Deliver molten metal into the mould cavity | c. The sand grains stick together | d. Moistening the sand | CO3 | (1) |
| 29. | The filler metal used in soldering process is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Furnace | b. Torch | c. Solder | d. Spelter | CO3 | (1) |
| 30. | The oxygen cylinder is usually painted with\_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. black colour | b. white colour | c. yellow colour | d. violet colour | CO3 | (1) |
| 31. | Plastic welding is also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ welding | | | |  |  |
|  | a. Pressure welding | b. Fusion welding | c. Thermit welding | d. Non-pressure welding | CO3 | (1) |
| 32. | In order to deliver molten metal from pouring basin to gate, a \_\_\_\_\_\_\_\_\_\_ is used. | | | |  |  |
|  | a. Sprue | b.Riser | c.Gate | d.Runner | CO3 | (1) |
| 33. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are used to carry molten metal from the furnace to the pouring basin | | | |  |  |
|  | a. Swages | b. Ladles | c. Crucible | d. Tongs | CO3 | (1) |
| 34. | Which among the following material is not used for making pattern | | | |  |  |
|  | a. Wood | b. Sand | c. Metal | d. Plastic | CO3 | (1) |
| 35. | During the drilling work on a lathe, the drill is mounted on the spindle of \_\_\_\_\_\_\_\_ | | | |  |  |
|  | a. Tailstock | b. Headstock | c. Tool post | d. Carriage | CO3 | (1) |
| 36. | Turning of metals in a machine shop is usually performed on \_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Milling machine | b. Shaper | c. Radial drilling | d. Lathe | CO3 | (1) |
| 37. | Which among the following is not a part of the carriage | | | |  |  |
|  | a. Compound rest | b. Tool post | c. Tail stock | d. Saddle | CO3 | (1) |
| 38. | \_\_\_\_\_\_\_\_\_\_\_\_ drilling machine is used for making holes at different locations on a large work piece. | | | |  |  |
|  | a. Gang | b. Radial | c. Multi-spindle | d. Sensitive | CO3 | (1) |
| 39. | In a plain milling machine the crosswise movement is achieved through \_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Saddle | b. Table | c. Knee | d. Arbour | CO3 | (1) |
| 40. | A lathe tool is considered as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . | | | |  |  |
|  | a. Single point cutting tool | b. Multi point cutting tool | c. Reamer tool | d. Drilling tool | CO3 | (1) |

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| **PART B(8 X 5 = 40 MARKS) (ANSWER ANY EIGHT)** | | | |
| 41. | State the difference between fire tube and water tube boilers. | CO1 | (5) |
| 42. | Sketch the layout of vapour absorption refrigeration system. | CO2 | (5) |
| 43. | Define humidity, relative humidity, DBT,WBT,DPT. | CO2 | (5) |
| 44. | Describe the main elements of a Diesel power plant. | CO1 | (5) |
| 45. | Write about the different types of solar collectors. | CO1 | (5) |
| 46. | With a neat sketch explain the working of a reciprocating pump. | CO1 | (5) |
| 47. | What is a pattern? Briefly explain about pattern materials, types and pattern allowance. | CO3 | (5) |
| 48. | List the various zones of Cupola furnace. | CO3 | (5) |
| 49. | In detail discuss and compare soldering and brazing with neat sketches. | CO3 | (5) |
| 50. | Explain the principle of working of a radial drilling machine with a neat sketch. | CO3 | (5) |
| **PART C( 2 X 10 = 20 MARKS) (ANSWER ANY TWO)** | | | |
| 51. | Explain the working principle of two stroke diesel engine with neat diagram. | CO1 | (10) |
| 52. | Draw the layout of a Thermal Power plant and explain the circuits. | CO1 | (10) |
| 53. | Explain with a sketch, the principle of gas welding process. Draw the three types of flames. | CO3 | (10) |

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