

**SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY:: PUTTUR****(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK****Subject with Code:** Basic Civil & Mechanical Engineering (23CE0101)**Course & Branch:** B.Tech – CSM, CAD, CIA, MECH **Year & Sem:** I-B.Tech & I-Sem **Regulation:** R23**UNIT –I**

- |           |  |                         |
|-----------|--|-------------------------|
| <b>1</b>  | <b>Answer All the Following Questions</b>  | <b>[L1] [CO1] [12M]</b> |
|           | a. Define Strength & Brittleness of a material   |                         |
|           | b. List out the factors affect the conductivity of the metals                            |                         |
|           | c. How do you classify the metals?   |                         |
|           | d. What are smart materials and mention examples   |                         |
|           | e. Write the applications of composite materials?  |                         |
| <b>2</b>  | Illustrate the role of Mechanical Engineering in Industries and society.                 | <b>[L2] [CO1] [12M]</b> |
| <b>3</b>  | Discuss about various advanced technologies in Automotive, Aerospace and marine sectors. | <b>[L2] [CO1] [12M]</b> |
| <b>4</b>  | Explain about various essential mechanical properties for the materials.                 | <b>[L2] [CO1] [12M]</b> |
|           | a) Draw the flow chart classifying engineering materials.                                | <b>[L4] [CO1] [6M]</b>  |
| <b>5</b>  | b) Differentiate between metals and Nonmetals.   | <b>[L4] [CO1] [6M]</b>  |
|           | a) List out various properties of the metals.  | <b>[L1] [CO1] [6M]</b>  |
| <b>6</b>  | b) Distinguish between ferrous and Nonferrous materials                                  | <b>[L4] [CO1] [6M]</b>  |
|           | a) List out various properties of Ceramic materials.                                     | <b>[L1] [CO1] [6M]</b>  |
| <b>7</b>  | b) Elucidate the ceramic applications.   | <b>[L2] [CO1] [6M]</b>  |
| <b>8</b>  | What is composite? How do you classify the composites? Explain in detail                 | <b>[L2] [CO1] [12M]</b> |
| <b>9</b>  | a) The most preferable material for the Automotive Industry is Composites. Justify       | <b>[L5] [CO1] [6M]</b>  |
|           | b) Identify numerous applications of Composites.   | <b>[L3] [CO1] [6M]</b>  |
| <b>10</b> | Name the types of smart materials and explain them.                                      | <b>[L2] [CO1] [12M]</b> |
| <b>11</b> | a) List out various important applications of smart materials.                           | <b>[L1] [CO1] [6M]</b>  |
|           | b) Discuss about the important properties of Nonferrous metals                           | <b>[L2] [CO1] [6M]</b>  |

**UNIT –II****1 Answer All the Following Questions**

- a. Name the steps involved in making a casting process
  - b. What are the factors on which machining depends? [L1] [CO2] [12M]
  - c. List out the functions of additive manufacturing.
  - d. How do you classify the heat engines?
  - e. What is Hybrid Electric vehicle?
- 2** Explain the working principle of casting with a neat sketch. And also mention its applications. [L2] [CO2] [12M]
- 3** a) How do you classify the forming process and explain them. [L2] [CO2] [6M]  
b) Mention the merits and demerits of forming process [L2] [CO2] [6M]
- 4** Elucidate various joining processes along with its merits and demerits [L2] [CO2] [12M]
- 5** Discuss the functions of various elements of CNC machine with a neat sketch. Also mention its advantages and disadvantages. [L2] [CO2] [12M]
- 6** a) Illustrate the functions of Additive manufacturing. [L2] [CO2] [6M]  
b) Differentiate between traditional Manufacturing and smart manufacturing [L2] [CO2] [6M]
- 7** a) Distinguish between fire tube boiler and water tube boiler [L2] [CO2] [6M]  
b) How do you classify the IC Engines? [L1] [CO2] [6M]
- 8** a) Describe the working of Two stroke Petrol Engine with a neat sketch [L2] [CO2] [6M]  
b) Draw the P-V diagram of Otto Cycle and explain. [L4] [CO2] [6M]
- 9** a) Illustrate the working of Four stroke diesel engine with a neat sketch [L2] [CO2] [6M]  
b) Differentiate between two stroke engine and four stroke engine [L2] [CO2] [6M]
- 10** a) Explain the working of simple vapour compression refrigeration system with a neat figure. [L2] [CO2] [12M]  
b) Distinguish between SI engines and CI engines [L2] [CO2] [6M]
- 11** a) Describe the functions of various components used in Electric and Hybrid vehicles. [L2] [CO2] [6M]  
b) List out various merits and demerits of Hybrid vehicles. [L1] [CO2] [6M]

**UNIT –III**

- |           |  |                         |
|-----------|--|-------------------------|
| <b>1</b>  | <b>Answer All the Following Questions</b>  | <b>[L1] [CO3] [12M]</b> |
|           | a. How do you classify the power plants?   |                         |
|           | b. What is the function of Engine cooling system?  |                         |
|           | c. Define the nuclear fission process with an example.   |                         |
|           | d. List out the basic components of Robot.   |                         |
|           | e. Mention the merits of Gear drive over other drives.   |                         |
| <b>2</b>  | Illustrate the working of steam power plant with a neat sketch.  | <b>[L2] [CO3] [6M]</b>  |
| <b>3</b>  | Draw the layout of Diesel power plant and explain.   | <b>[L2] [CO3] [10M]</b> |
| <b>4</b>  | Sketch the general layout of hydroelectric power plant and brief it.<br>Also mention its advantages and disadvantages. | <b>[L2] [CO3] [6M]</b>  |
| <b>5</b>  | a) Describe the nuclear chain reaction process.  | <b>[L3] [CO3] [6M]</b>  |
|           | b) Explain the working principle and layout of Nuclear power plant.  | <b>[L2] [CO3] [6M]</b>  |
| <b>6</b>  | How do you Classify various mechanical power transmission systems? Explain them.                                       | <b>[L2] [CO3] [12M]</b> |
| <b>7</b>  | a) Differentiate between Belt drives, chain drives and gear drives.  | <b>[L2] [CO3] [6M]</b>  |
|           | b) What is the need of Robots in Industry?   | <b>[L1] [CO3] [6M]</b>  |
| <b>8</b>  | a) Describe in detail about Robot Anatomy.   | <b>[L4] [CO3] [12M]</b> |
|           | b) Explain various types of joints used in Robots.   | <b>[L2] [CO3] [6M]</b>  |
| <b>9</b>  | a) Explain in brief about Asimov's laws of Robotics  | <b>[L1] [CO3] [6M]</b>  |
|           | b) List out various merits and demerits of Robots in detail.   | <b>[L1] [CO3] [6M]</b>  |
| <b>10</b> | Classify the robots based on Robot Configurations and explain its working.   | <b>[L1] [CO3] [12M]</b> |
| <b>11</b> | a) Robots are superior to human. Justify   | <b>[L5] [CO3] [6M]</b>  |
|           | b) List out various applications of robots in detail   | <b>[L1] [CO3] [6M]</b>  |



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**BIT BANK (OBJECTIVE)**

**Subject with Code:** BASIC CIVIL AND MECHANICAL ENGINEERING (23CE0101)

**Regulation:** R23      **Course & Branch:** B.Tech – CSM, CAD, CIA, MECH      **Year & Sem:** I & I

**UNIT – I**

- 1 Which of the following properties ceramics do not possess [   ]  
A. Hardness  
B. Brittleness  
C. Elasticity at low temperature  
D. Malleability
- 2 Which of the following material has maximum ductility? [   ]  
A. Copper  
B. Nickel  
C. Mild steel  
D. Aluminium
- 3 Shock resisting steels should have [   ]  
A. Low wear resistance  
B. Low hardness  
C. Low tensile strength  
D. Toughness
- 4 The blade of a power saw is made of [   ]  
A. Boron steel  
B. High speed steel  
C. Stainless steel  
D. Malleable cast iron
- 5 The property of a material due to which it breaks with little permanent distortion, is called [   ]  
A. Brittleness  
B. Ductility  
C. Malleability  
D. Plasticity

- 6 The strength is the ability of a material to resist [    ]  
A. Deformation under stress  
B. Externally applied forces with breakdown or yielding  
C. Fracture due to high impact loads  
D. None of these
- 7 The stiffness is the ability of a material to resist [    ]  
A. Deformation under stress  
B. Fracture due to high impact loads  
C. Externally applied forces with breakdown or yielding  
D. None of the above
- 8 The percentage of carbon in cast iron varies from [    ]  
A. 0.1 to 0.5  
B. 0.5 to 1  
C. 1 to 1.7  
D. None of the above
- 9 The ability of a material to absorb energy in the plastic range is called [    ]  
A. Resilience  
B. Creep  
C. Fatigue strength  
D. Toughness
- 10 Brass is an alloy of [    ]  
A. Copper and zinc  
B. Copper and tin  
C. Copper, tin and zinc  
D. None of these
- 11 Bronze is an alloy of [    ]  
A. Copper and zinc  
B. Copper and tin  
C. Copper, tin and zinc  
D. None of these
- 12 The hardness is the property of a material due to which it [    ]  
A. with little permanent distortion  
B. can cut another can be drawn into wires  
C. breaks metal  
D. can be rolled or hammered into thin sheets

- 13 The ability of a material to resist fracture due to high impact loads, is called [    ]  
A.Strength  
B.Toughness  
C.Stiffness  
D.Brittleness
- 14 Which of the following is an amorphous material? [    ]  
A.Mica  
B.Silver  
C.Lead  
D.Glass
- 15 An alloy of copper, tin and zinc is known as [    ]  
A.Brass  
B.Bronze  
C.Gun metal  
D.Muntz metal
- 16 The alloy, mainly used for corrosion resistance in stainless steels is [    ]  
A.Silicon  
B.Manganese  
C.Carbon  
D.Chromium
- 17 An alloy steel which is work hardenable and which is used to make the blades of bulldozers, bucket wheel excavators, contain iron, carbon and [    ]  
A. Chromium  
B. Silicon  
C. Manganese  
D. Magnesium
- 18 Iron ore is, usually, found in the form of [    ]  
A.Oxides  
B.Carbonates  
C.Sulphides  
D.All of these

- 19 What materials is primarily used in Shape memory Alloys? [    ]  
A.Polypropylene  
B.Polystrene  
C.NITINOL  
D.Copper
- 20 Cast iron is manufactured in [    ]  
A.Blast furnace  
B.Cupola Furnace  
C.Open hearth furnace  
D.Bessemer converter
- 21 Which of the following is a property of ceramics? [    ]  
A.Low strength  
B.Low melting point  
C.Resistant to corrosion  
D.Bad insulation
- 22 Crystal structure of a material is, generally, examined by [    ]  
A.Naked eye  
B.Optical microscope  
C.Metallurgical microscope  
D.X-ray techniques
- 23 Silicon when added to copper improves [    ]  
A.Machinability  
B.Hardness  
C.Hardness and strength  
D.Strength and ductility
- 24 Which of the following is not a step in making ceramics? [    ]  
A. Alloying  
B. Powder pressing  
C. Sintering  
D. Vitrification
- 25 In CNC machine tool, the part program entered into the computer memory [    ]  
A. Can be used only once  
B.Can be used again and again  
C. Can be used again but it has to be modified every time  
D. Cannot say

- 26 Which of the following is a characteristic of alumina? [   ]
- A.Excellent hardness
  - B.Good tensile strength
  - C.Good toughness
  - D.Poor wear resistance
- 27 The blade of a power saw is made of [   ]
- A,Boron steel
  - B.High speed steel
  - C.Stainless steel
  - D.Malleable cast iron
- 28 Which among the following exhibits the highest thermal conductivity? [   ]
- A.Alumina
  - B.Silicon carbide
  - C.Silicon nitride
  - D.Sialon
- 29 Which of the following is a ceramic? [   ]
- A.Brick
  - B.Porcelain
  - C.Earthenware
  - D.All of the above
- 30 Ceramic materials are weak in [   ]
- A.Shearing
  - B.Tension
  - C.Both (A) and (B)
  - D.Compression
- 31 Which of the following is (are) modern or advanced ceramics? [   ]
- A.Silicon carbide
  - B.Tungsten carbide
  - C.Both (A) and (B)
  - D.High speed steel
- 32 What is the name of the ceramic manufacturing process? [   ]
- A.Combustion engineering
  - B.Sintering
  - C.Abrasive blasting
  - D.None



33. Ceramic materials have [   ]
- A.Low electric conductivity
  - B.High electric conductivity
  - C.Very high electric conductivity
  - D.None
34. Which of the following is not a characteristic trait of composite materials? [   ]
- A.High strength, toughness, modulus
  - B.Lightweight
  - C.Easy to assemble
  - D.Sensitive to temperature change
- 35 Which of the following is a composite material? [   ]
- A.Y-Alloy
  - B.High Speed Steel
  - C.Tungsten Carbide
  - D.Fibre Reinforced Composite
- 36 The type of material that expands and contract in response to an applied electric field is [   ]
- \_\_\_\_\_
- A.Smart material
  - B.Advanced material
  - C.Biomaterial
  - D.Nanomaterial
- 37 Based on the important category, concrete and fibre glass are the examples of which of the [   ]
- following?
- A.Composites
  - B.Polymers
  - C.Ceramics
  - D.Semi-conductors
- 38 The material which is not used for aerospace application\_\_\_\_\_ [   ]
- A.Plastics
  - B.Polymers
  - C.Aluminium alloys
  - D.Silica

- 39 When does a shape memory alloy return to its original shape? [   ]
- A. At transition temperature
  - B. At Curie temperature
  - C. At memory transfer temperature
  - D. At normal temperature
- 40 The piezoelectric materials used for converting energy are called as \_\_\_\_\_ [   ]
- A. Transition Devices
  - B. Converter
  - C. Dielectric
  - D. Transducer

**UNIT – II**

- 1 Process in which hot liquid metal is poured into a mold that contains a hollow cutout [ ]  
or cavity of the desired finished shape called as \_\_\_\_\_  
A. Forming  
B. Welding  
C. Casting  
D. Joining.
- 2 In a \_\_\_\_\_, the molten metal is poured and allowed to solidify while the mould [ ]  
is revolving.  
A. Die casting method  
B. Slush casting method  
C. Permanent mould casting method  
D. Centrifugal casting method
- 3 A sand employed on the faces of the pattern before moulding, is called [ ]  
A. Green sand  
B. Dry sand  
C. Loam sand  
D. Parting sand
- 4 The temperature at which the new grains are formed in the metal is called [ ]  
A. Lower critical temperature  
B. Upper critical temperature  
C. Eutectic temperature  
D. Recrystallisation temperature
- 5 Which one is not forming process [ ]  
A. Rolling  
B. Extrusion  
C. Forging  
D. Casting
- 6 Operations can be performed on Lathe machine [ ]  
A. Turning only  
B. Joining  
C. Facing, Turning and Knurling  
D. Drilling

- 7 In which machining process, removed metal is negligible? [   ]
- A. Surface finishing
  - B. Metal removal
  - C. Both A & B
  - D. None of the mentioned
- 8 The cold working of metals is carried out [   ]
- A. At the recrystallisation temperature
  - B. Below the recrystallisation temperature
  - C. Above the recrystallisation temperature
  - D. At any temperature
- 9 Castings are usually [   ]
- A. costlier than forgings
  - B. Cheaper than forgings
  - C. At the same rate as forging for similar metal
  - D. None of the above
- 10 Which plastic materials contain strong cross linkings in their molecular structure. [   ]
- A. Thermoplastic materials
  - B. Thermosetting materials
  - C. Both a. and b.
  - D. None of the above
- 11 During hot working of metals [   ]
- A. Poor surface finish is produced
  - B. Scale is formed on the metal surface
  - C. Close tolerances can not be maintained
  - D. All of these
- 12 The purpose of a riser is to [   ]
- A. Deliver molten metal into the mould cavity
  - B. Act as a reservoir for the molten metal
  - C. Feed the molten metal to the casting in order to compensate for the shrinkage
  - D. Deliver the molten metal from pouring basin to gate
- 13 What is the average temperature required for hot forging of aluminium alloys. [   ]
- A. 1100°C to 1200°C
  - B. 350°C to 525°C
  - C. 2000°C to 2500°C
  - D. None of the above

- 14 The electron beam welding can be carried out in [    ]
- A. Open air
  - B. A shielded gas environment
  - C. Vacuum
  - D. A pressurised inert gas chamber
- 15 At forging temperature when a compressive force is applied on the material, it deforms [    ]
- A. Elastically in the direction of least resistance
  - B. Elastically in the direction of maximum resistance
  - C. Plastically in the direction of least resistance
  - D. Plastically in the direction of maximum resistance
- 16 The process of joining similar or dissimilar materials by heating them below 450°C [    ]  
using non-ferrous filler material is called as \_\_\_\_\_
- A. Brazing
  - B. Soldering
  - C. Welding
  - D. All of the above
- 17 Casting replica used to make the cavity is called as [    ]
- A. Mould
  - B. Pattern
  - C. Cope
  - D. None of the above
- 18 The plastic materials which do not undergo chemical change when heated are [    ]  
\_\_\_\_\_
- A. Thermoplasts
  - B. Thermosets
  - C. Both a. and b.
  - D. None of the above
- 19 The operation of cutting a cylindrical hole in a sheet of metal by the punch and die is [    ]  
called
- A. Shearing
  - B. Piercing
  - C. Punching
  - D. Blanking

- 20 The foundation of the centre lathe is called as [    ]  
A. Carriage  
B. Tray  
C. Base  
D. Bed
- 21 The oxy-acetylene gas used in gas welding produce a flame temperature of [    ]  
A. 1800°C  
B. 2100°C  
C. 2400°C  
D. 3200°C
- 22 What is meant by drag in casting process? [    ]  
A. Upper part of casting flask  
B. Molten metal  
C. Lower part of casting flask  
D. Upper and lower part of casting flask
- 23 In four stroke cycle engine, cycle is completed in \_\_\_\_\_ [    ]  
A. Two strokes of the piston  
B. Two revolutions of the crankshaft  
C. Three strokes of the piston  
D. Four revolutions of the crankshaft
- 24 Which of the following energy conversion devices convert heat into work? [    ]  
A. Electrical generators  
B. I. C engines  
C. Condensers  
D. All of the above
- 25 Thermal efficiency of S.I. engines is low, due to \_\_\_\_\_ [    ]  
A. low compression ratio  
B. high compression ratio  
C. low pressure ratio  
D. High pressure ratio
- 26 An isobaric process, has constant \_\_\_\_\_ [    ]  
A. Density  
B. Pressure  
C. Temperature  
D. Volume

- 27 In an isolated system, \_\_\_\_\_ can be transferred between the system and its surrounding. [    ]
- A. Only energy
  - B. Only mass
  - C. Both energy and mass
  - D. Neither energy nor mass
- 28 In which of the following processes, material is neither added nor removed but is deformed into desired shape? [    ]
- A. Surface finishing process
  - B. Metal forming process
  - C. Casting
  - D. Machining
- 29 Which of the following is a power transmitting element? [    ]
- A. Nuts and bolts
  - B. Sprockets and chains
  - C. Axles
  - D. All of the above
- 30 A two stroke engine gives \_\_\_\_\_ mechanical efficiency than a four stroke cycle engine. [    ]
- A. Higher
  - B. Lower
  - C. Equal
  - D. None of the mentioned
- 31 In a petrol engine, the mixture has the lowest pressure at the \_\_\_\_\_. [    ]
- A. Beginning of suction stroke
  - B. End of suction stroke
  - C. End of compression stroke
  - D. None of the mentioned
- 32 A heat engine is a device which transforms the \_\_\_\_\_ of a fuel into thermal energy. [    ]
- A. Electrical energy
  - B. Chemical energy
  - C. Mechanical energy
  - D. Solar Energy

- 33 The thermal energy transformed by heat engine is used to produce \_\_\_\_\_ [    ]  
A. Thermal work  
B. Electrical work  
C. Laser action  
D. Mechanical work
- 34 In Otto cycle, heat addition takes place at \_\_\_\_\_ [    ]  
A. Constant temperature  
B. Constant pressure  
C. Constant volume  
D. None of the mentioned
- 35 In a refrigeration cycle, in which of the following heat absorption takes place? [    ]  
A. Evaporator  
B. Condenser  
C. Expansion valve  
D. Compressor
- 36 In a four stroke cycle engine, the sequence of operation is \_\_\_\_\_ [    ]  
A. Suction, expansion, compression and exhaust  
B. Expansion, compression, suction and exhaust  
C. Suction, compression, expansion and exhaust  
D. Compression, expansion, suction and exhaust
- 37 The device which divides the high pressure side and the low pressure side of a refrigerating system is known as \_\_\_\_\_ [    ]  
A. Condenser device  
B. Evaporator device  
C. Receiver device  
D. Expansion device
- 38 The pipe line emanating from compressor up to the condenser is called \_\_\_\_\_ [    ]  
A. Suction line  
B. Pipe line  
C. Liquid line  
D. Delivery line



39 The high pressure and temperature vapor refrigerant enters the \_\_\_\_\_ of the vapor [ ]  
compression system.

A. Compressor

B. Condenser

C. Receiver

D. Evaporator

40 The low pressure and temperature vapor refrigerant enters the \_\_\_\_\_ of the vapor [ ]  
compression system.

A. Compressor

B. Condenser

C. Receiver

D. Evaporator

**UNIT – III**

- 1 What is a power plant? [   ]
  - A. Industrial facility that uses primary energy to generate electricity
  - B. Industrial facility that uses secondary energy to generate mechanical energy
  - C. Industrial facility that uses primary energy to generate mechanical energy
  - D. Industrial facility that uses secondary energy to generate electricity
- 2 Which of the following is a type of power plant? [   ]
  - A. Thermal power plant
  - B. Nuclear power plant
  - C. Hydropower plant
  - D. All of the mentioned
- 3 Where was India's first nuclear power plant was installed at? [   ]
  - A. Obninsk
  - B. Tarapur, Maharashtra
  - C. Boisar, Maharashtra
  - D. None of the mentioned
- 4 What is a hydropower plant? [   ]
  - A. Mechanical energy from the stagnant water currents
  - B. Electrical energy from the moving water currents
  - C. Potential energy from the water currents
  - D. Electrical energy from the moving water currents
- 5 What is the function of a moderator? [   ]
  - A. Increases the speed of neutrons
  - B. Increases the speed of electrons
  - C. Reduces the speed of neutrons
  - D. Reduces the speed of electrons
- 6 Which of the following is the cheapest plant in operation and maintenance? [   ]
  - A. Thermal power plant
  - B. Nuclear power plant
  - C. Hydro Electric power plant
  - D. All of them

- 7 Which of the following protects penstock due to sudden variation of flow or velocity of water? [   ]
- A. Anchors
  - B. Forebays
  - C. Trash rack
  - D. Surge tank
- 8 Air-Preheater in a steam power plant \_\_\_\_\_ [   ]
- A. Raises the temperature of the furnace gases
  - B. Recovers the heat from the flue gases leaving the economiser
  - C. Improves combustion rate
  - D. All of the mentioned
- 9 In nuclear power stations which nuclear reaction is performed? [   ]
- A. Nuclear fission
  - B. Nuclear fusion
  - C. 90% fission and 10% fusion
  - D. 90% fusion and 10% fission
- 10 Nuclear fuel in reactor lasts for \_\_\_\_\_ [   ]
- A. More than 5 months
  - B. Few weeks
  - C. Few days
  - D. More than 5 years
- 11 Which of the following kind of a process does a 'Steam Power Plant' undergoes? [   ]
- A. Cyclic
  - B. Irreversible
  - C. Expansion
  - D. Adiabatic
- 12 Which of the following kind of energy output is obtained from a 'Steam Power Plant'? [   ]
- A. Electricity
  - B. Thermal energy
  - C. Sound energy
  - D. Heat energy

- 13 Which of the following are the components of a Steam Power Plant? [   ]
- A. Boiler, Turbine, Condenser, Pump
  - B. Boiler, Turbine, Pump, Expansion valve
  - C. Evaporator, Condenser, Boiler, Turbine
  - D. Evaporator, Condenser, Boiler, Expansion valve
- 14 A moderator, in nuclear power plants, is a medium introduced into the fuel mass in order to [   ]
- \_\_\_\_\_
- A. Control the reaction
  - B. Reduce the temperatur
  - C. Extract heat from nuclear reaction
  - D. Slow down the speed of fast moving neutrons
- 15 Efficiency of a power plant is more in summers or winters? [   ]
- A. Same in both
  - B. Depends on the variation
  - C. Summers
  - D. Winters
- 16 Reflector in nuclear power plants \_\_\_\_\_ neutron leakage. [   ]
- a) decreases
  - b) has no effect
  - c) increases
  - d) all of the mentioned
- 17 Which particle is bombarded on heavy nucleus of nuclear fuel? [   ]
- A. Electron
  - B. Proton
  - C. Neutron
  - D. Photon
- 18 In which part of nuclear power plant steam is produced? [   ]
- A. Boiler
  - B. Heat exchanger
  - C. Chamber across the reactor
  - D. Air preheater

- 19 Which of the following material is not used as moderator? [   ]
- A. Oxygen
  - B. Ordinary water
  - C. Heavy water
  - D. Graphite
- 20 What is the main function of moderator? [   ]
- A. It absorb the extra neutrons
  - B. It divert extra neutrons
  - C. It slow down the speed of fast neutrons
  - D. It absorb the heat energy caused by nuclear reaction
- 21 The fuel mainly used in nuclear fission reactors are: [   ]
- A. U235                      B. U239                      C. U233                      D. U238
- 22 The main body of reactor is called \_\_\_\_\_ [   ]
- A. Thermal shielding
  - B. Reactor vessel
  - C. Reflector
  - D. Biological shielding
- 23 Which of the following is the most essential requirement of control rod material? [   ]
- A. It must be light weight
  - B. It must be cheap
  - C. It must have high absorption capacity for neutrons
  - D. It must be very reflective to neutrons
- 24 Which of the following part of nuclear reactor is used to control the rate of reaction. [   ]
- A. Moderator                      C. Reflector
  - B. Control rods                      D. Coolant
- 25 The laws of Robotics are: [   ]
- A. A robot may not injure a human being
  - B. A robot must obey the order given by human except when conflict with the first law
  - C. A robot must protect its own existence except when it is violating first and second law
  - D. Both b and c
- 26 The basic components of robot are: [   ]
- A. The mechanical linkage
  - B. Sensors and controllers
  - C. User interface and power conversion unit
  - D. All of them.

- 27 Revolving Joint of the robot is referred as [    ]
- A. L Joint
  - B. O Joint
  - C. T Joint
  - D. V Joint
- 28 The Following measures are carried out by internal state sensors of the end effector [    ]
- A. Position
  - B. Position and Velocity
  - C. Velocity and Acceleration
  - D. Position, Velocity and Acceleration
- 29 How many laws of Robotics proposed by Asimov. [    ]
- A. 5
  - B. 2
  - C. 3
  - D. 6
- 30 \_\_\_\_\_Sensor is an example of proximity sensor used in Robots. [    ]
- A. Micro switch
  - B. Ultrasonic
  - C. Touch and Tactile
  - D. None of the above
- 31 Which of the basic parts of a robot unit would include the computer circuitry that could be [    ]  
programmed to determine what the robot would do?
- A. Sensor
  - B. Controller
  - C. Arm
  - D. End effector
- 32 The number of moveable joints in the base, the arm, and the end effectors of the robot [    ]  
determines\_\_\_\_\_
- A. Degrees of freedom
  - B. Payload capacity
  - C. Operational limits
  - D. Flexibility

- 33 Which of the following places would be LEAST likely to include operational robots? [    ]
- A. Warehouse
  - B. Factory
  - C. Hospitals
  - D. Private homes
- 34 Which one of the following drives is used for transmitting power without slip. [    ]
- A. Gear Drive
  - B. Cone pulleys
  - C. Rope Drive
  - D. Belt Drive
- 35 The efficiency of transmitting power will be maximum in case of [    ]
- A. Open Belt Drive
  - B. V belt Drive
  - C. Rope Drive
  - D. Chain Drive
- 36 Due to slip of the belt, the velocity ratio of the belt drive [    ]
- A. Decreases
  - B. Increases
  - C. Does not change
  - D. None of the mentioned
- 37 The chain drive transmits \_\_\_\_\_ power as compared to belt drive. [    ]
- A. More
  - B. Less
  - C. Equal
  - D. None of the mentioned
- 38 Gear lubricant should be changed \_\_\_\_\_ [    ]
- A. After 1200 working hours
  - B. At every 1 month duration
  - C. At least once in a year
  - D. At least ten times during its entire life
- 39 Chain and sprocket drive is used, where \_\_\_\_\_ [    ]
- A. Power is to be transmit at  $90^\circ$
  - B. Two shafts are at short distance
  - C. Two shafts are at long distance
  - D. Power is to transmit radially

40 V belts are usually used for

[   ]

- A. Long Drives
- B. Short Drives
- C. Either long drives or short drives
- D. Neither long drives or short drives