

Jharkhand University of Technology, Ranchi
6th Semester Diploma Examination, 2022

Subject : Industrial Engg. & Management

Subject Code : 601

Time Allowed : 3 Hours

Full Marks : 80

Pass Marks : 26

Answer in your own words.

*Answer five questions in which Question No. 1 is compulsory
and answer any four from rest questions.*

All questions carry equal marks.

1. ✓ Choose the correct answer:

2×8=16

- (i) Basic tool in work study is
- (a) Graph paper (b) Process chart
(c) Planning chart (d) stop watch
- (ii) For a product layout the material handling equipment must
- (a) have full flexibility
(b) employ conveyor belts, tracks, tractors etc.
(c) be a general purpose type
(d) be designed as special purpose for a particular application
- (iii) Which of the following layouts is suited for mass production?
- (a) Process layout (b) Product layout
(c) Fixed position layout (d) Plant layout
- (iv) The production cost per unit can be reduced by
- (a) Producing more with increased inputs (b) Producing more with the same input
(c) Eliminating idle time (d) Minimizing resource wastage
- (v) Frederick W. Taylor introduced a system of working known as
- (a) Line organization (b) Line and staff organization
(c) Functional organization (d) Effective organization
- (vi) Which of the following equation is not in conformity with others?
- (a) Organization performance × motivation = profit
(b) Knowledge × skill = ability
(c) Ability × motivation = performance
(d) Attitude × situation = motivation

- (vii) Percent idle time for man or machine is found by
- (a) Work sampling (b) Time study
(c) Method study (d) Work study
- (viii) Which of these is not the principle of management by Henry Fayol?
- (a) Unity of command (b) Science not a thumb rule
(c) Authority and responsibility (d) Esprit de corps
2. (a) What are the characteristics of management? Explain any four of them. 8
(b) With the help of a diagram explain the level of management. 8
3. (a) State the difference between Authority and Responsibility. 6
(b) What are the '14' principles of management according to Henry Fayol? Explain briefly. 10
4. (a) Define HRM. Explain the structure of the human resource development in relation to the role of HR manager. 8
(b) Explain the term selection. Elaborate on the process of recruitment and selection. 8
5. (a) What are the factors affecting entrepreneurship? Explain any four of them. 10
(b) Define Training. What are the objective of training? 6
6. (a) Discuss the different form of ownership business. 8
(b) Differentiate between product layout and process layout. 8
7. Write short notes on *any four* of the following: 4×4=16
- (a) ABC Analysis
(b) Industrial Dispute Act
(c) Intellectual Property Act
(d) Functions of PPC
(e) Joint stock company
(f) Sole proprietorship

Jharkhand University of Technology, Ranchi

6th Semester Diploma Examination, 2022

Subject : Utilization of Electrical Energy

Subject Code : ELE-604

Time Allowed : 3 Hours

Full Marks : 80

Pass Marks : 26

Answer in your own words.

*Answer five questions in which Question No. 1 is compulsory
and answer any four from rest questions.*

All questions carry equal marks.

1. Choose the correct answer:

2×8=16

(i) The total quality of light energy emitted per second from a luminous body is called

(a) Light

(b) Lumen

(c) Luminous flux

(d) Luminous intensity

(ii) Which of the following factors to be considered while designing lighting scheme?

(a) Illumination level

(b) Uniformity of illumination

(c) Colour of light

(d) All of these

(iii) Advantages of electrical heating is/are

(a) ease of control

(b) no pollution

(c) cheapness

(d) All of these

(iv) Which of the following is not a type of Resistance welding?

(a) Butt welding

(b) Flash-butt welding

(c) Arc welding

(d) Spot welding

(v) Types of Elevator machines are

(a) Drum type

(b) Traction type

(c) Both of these

(d) None of these

(vi) The connections of any two phases are reversed so the direction of rotating field is reversed is known as

(a) Regenerative braking

(b) Plugging

(c) Rheostatic braking

(d) None of these

- (vii) A good heating element should have
- (a) high resistivity and low melting point.
 - (b) low resistivity and high melting point.
 - (c) high resistivity and high melting point.
 - (d) low resistivity and low melting point.
- (viii) The scheduled speed of a train can be increased by
- ~~(a)~~ increasing the acceleration and retardation.
 - (b) increasing the crest speed.
 - (c) decreasing the duration of stop.
 - (d) All of these
2. (a) Explain different laws of Illumination.
- (b) Define the following terms used in illumination
- (i) Lumen
 - (ii) Candle power
 - (iii) MHCP
 - (iv) MSCP
3. (a) Classify electrical heating methods.
- (b) State applications of resistance heating.
4. (a) How arc is formed in electric arc welding?
- (b) State the factors on which arc length depends.
5. (a) Compare electric drive and mechanical drive.
- (b) State the factors affecting scheduled speed.
6. Write short notes on *any two* of the following:
- (i) Flood lighting
 - (ii) Mechanical braking
 - (iii) Power factor improvement
 - (iv) Two part tariff

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(vii) A cycloconverter is a

- (a) frequency changer from higher to lower frequency with one-state conversion
- (b) frequency changer from higher to lower frequency with two-state conversion
- (c) frequency changer from lower to higher frequency with one-state conversion
- (d) either (a) or (c)

(viii) Which of the following finds applications in speed control of a DC motor?

- (a) FET
- (b) NPN transistor
- (c) SCR
- (d) None of these

2. Describe the construction and principle of operation of Power Transistor. Also draw and explain its V-I characteristics.

3. State and explain different turn on methods of SCR.

4. Explain with neat circuit diagram and waveform, single phase half wave controlled rectifier with inductive load.

5. Classify choppers. Explain the principle of operation of chopper and its uses.

6. (a) Compare constant voltage source and constant current source inverter.

(b) With neat circuit diagram and waveform, explain the operating principle of single phase voltage source inverter.

7. (a) Enumerate the advantages of HVDC transmission over AC transmission.

(b) Define the term resonant converters and state its types.

8. Write short notes on *any two* of the following:

(a) Class C commutation

(b) SMPS

(c) TRIACS

(d) HF Inverters for Heating

Jharkhand University of Technology, Ranchi

6th Semester Diploma Examination, 2022

Subject : Renewable Energy Sources (Elective-III)

Subject Code : ELE-606

Time Allowed : 3 Hours

Full Marks : 80

Pass Marks : 26

Answer in your own words.

*Answer five questions in which Question No. 1 is compulsory
and answer any four from rest questions.*

All questions carry equal marks.

1. Write the correct answer:

- (i) Solar cell is a device which converts the solar energy into
 (a) Electrical energy (b) Thermal energy
 (c) Sound energy (d) All of these
- (ii) Biomass can be converted to
 (a) Methane gas (b) Biodiesel
 (c) Ethanol (d) All of these
- (iii) The rate of incident energy per unit area of a surface is known as
 (a) Albedo (b) Irradiance
 (c) Zenith (d) None of these
- (iv) Which renewable energy source contributes to maximum generation of power in India?
 (a) Wind (b) Solar
 (c) Geothermal (d) Biomass
- (v) Which of the below theory is related to non-renewable resources?
 (a) Game theory (b) Phiogistor theory
 (c) Big bang theory (d) Hotelling's theory
- (vi) In which of the following region winds are stronger and constant?
 (a) Deserts (b) Offshore
 (c) Low altitudes sites (d) All of these
- (vii) The efficiency of various types of collectors _____ with _____ temperature.
 (a) increasing, decreasing (b) decreasing, increasing
 (c) remain same, increasing (d) depends upon type of collector, independent

(viii) A tide whose difference between high and low tides is least is called as

(a) Diurnal tide

(b) Spring tide

(c) Neap tide

(d) Ebb tide

2. (a) What are the different sources of non-conventional energy?
 (b) What is a photo-voltaic effect? Explain in brief principle of solar cell.
3. What is a fuel cell? Explain in brief working of a hydrox type fuel cell.
4. What is ocean thermal energy? How the ocean thermal energy plants are classified? Explain the close cycle process of ocean thermal energy conversion process.
5. Draw the block diagram of biomass energy unit. Explain each in details. Compare the merits and demerits of electrical energy with the other form of energy.
6. (a) What factors are taken into consideration in site selection for a wind plant?
 (b) What is solar collector and what are their types?
7. Draw a neat sketch of wind electric power plant. Explain how does it works.
8. Write short notes on *any two* of the following:
- (a) Applications of the fuel cell
 - (b) MHD power generation
 - (c) Biomass and Biogas
 - (d) Solar pond
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Jharkhand University of Technology, Ranchi

6th Semester Diploma Examination, 2022

Subject : Smart Grid (Elective-IV)

Subject Code : ELE-608

Time Allowed : 3 Hours

Full Marks : 80

Pass Marks : 26

*Answer in your own words.**Answer five questions in which Question No. 1 is compulsory and answer any four from rest questions.**All questions carry equal marks.*

1. Choose the correct option:

2×8=16

- (i) PMU in Smart Grid stands for
(a) Phasor Management Unit (b) Power Measurement Unit
 (c) Phasor Measurement Unit (d) Power Metering Unit
- (ii) Benefits of real time pricing are to
 (a) reduce electricity bill. (b) flatload duration curve.
(c) reduce stress on transformer. (d) All of these
- (iii) Function of Smart Grid is
(a) technology maturity and risk in implementation.
(b) efficiency and reliability of power system.
(c) lack of awareness for consumers.
 (d) All of the above
- (iv) The adaptive protection is provided because of
(a) dynamics in the level of fault current. (b) increase in load system.
(c) interconnection of grid system. (d) unpredictable energy supply.
- (v) The control of Micro-grid is performed by the
(a) SCADA System (b) PLC System
(c) Smart Grid System (d) None of these
- (vi) Interlocking schemes should be introduced between
(a) isolators and renewable source (b) relays and breakers
(c) breakers and isolators (d) All of these
- (vii) IDMTL stands for
(a) Inverse Distributed Minimum Time Lag (b) Inverse Definite Minimum Time Lag
(c) Inverse Distributed Maximum Time Lag (d) Inverse Definite Maximum Time Lag

(viii) The Grid system is broadly divided into two parts namely

(a) Main grid and Mini grid.

(b) Large grid and Small grid.

(c) Micro-grid and Large grid.

✓(d) Main grid and Micro-grid.

- ✓2. Explain the concept of Smart Grid and its necessity and benefits.
 - ✓3. Explain the operational principle of Micro-Grid. How to control and protect it?
 4. Explain the IP based protocols.
 5. (a) Explain Smart metering and advantages of it.
(b) Explain Wide area measurement system.
 6. What is meant by Distributed Generation Utilization Barriers? Explain its advantages in Smart Grid.
 7. Write short notes (*any two*) on the following:
 - ✓(a) E-Commerce of Electricity
 - (b) Zigbee Communication Technologies
 - (c) Conventional Grid and Smart Grid
 - ✓(d) Load Dispatch Center
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