PROVISIONAL ANSWER KEY

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Exam:	Boiler Attendant
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Question1:-What is the unit of mass in system international units?

A:-Gram

B:-Pound

C:-Kilogram

D:-Ounce

Correct Answer:- Option-C

Question2:-The Unit of temperature in FPS system of units is _____.

A:-Degree Fahrenheit

B:-Degree Centigrade

C:-Kelvin

D:-Reaumur

Correct Answer:- Option-A

Question3:-How much is the force that import an acceleration of 1 M/s^2 to a body of mass 1 kg?

A:-1 Pascal

B:-1 Newton

C:-1 Dyne

D:-1 Pound-force

Correct Answer:- Option-B

Question4:-What is the unit of power in MKS system?

A:-Foot pound per second

B:-Horse Power

C:-Erg per second

D:-Watt

Correct Answer:- Option-D

Question5:-Joule is the unit of _____ in SI unit.

A:-Work

B:-Power

C:-Temperature

D:-Specific heat

Correct Answer:- Option-A

Question6:-Which one of the following quantity have the unit Newton per square meter in SI units?

A:-Pressure

B:-Force

C:-Power

D:-Work

Correct Answer:- Option-A

Question7:-1 N/M^2 is equal to _____.

A:-1 lbf/in^2

B:-1 Pa

C:-1 Bar

D:-1 Kg/mm^2

Correct Answer:- Option-B

Question8:-Which one of the following is a fundamental unit?

A:-Newton

B:-Kilogram

C:-Joule

D:-Watt

Correct Answer:- Option-B

Question9:-The quantity of heat required to raise the temperature of 1 gram of water through $1^{o}C$ is known as _____.

A:-Joule

B:-British thermal Unit

C:-Centigrade thermal unit

D:-Calorie

Correct Answer:- Option-D

Question10:-Which one of the following statement is true?

A:-Absolute pressure = Atmospheric pressure - Gauge pressure

B:-Atmospheric pressure = Gauge pressure - Absolute pressure

C:-Absolute pressure = Gauge pressure + Atmospheric pressure

D:-Gauge pressure = Absolute pressure + Atmospheric pressure

Correct Answer:- Option-C

Question11:-Dryness fraction of dry saturated steam is

A:-0.5

B:-1

C:-Greater than 1

D:-0

Correct Answer:- Option-B

Question12:-On heating above dry steam point we get

A:-Superheated steam

B:-Wet Steam

C:-Saturated Steam

D:-Dryness Fraction

Correct Answer:- Option-A

Question13:-With increase in pressure, boiling point of a liquid

A:-decreases

B:-increases

C:-Remains the same

D:-none of these

Correct Answer:- Option-B

Question14:-Heat required to raise the temperature of water from zero degree Celsius to saturation temperature is called

A:-Latent Heat

B:-Dryness Fraction

C:-Heat of superheat

D:-Sensible heat

Correct Answer:- Option-D

Question15:-Heat supplied to convert saturated water into saturated steam is called:

A:-Latent heat

B:-Sensible heat

C:-Superheat

D:-Temperature

Correct Answer:- Option-A

Question16:-During latent heating, the temperature

A:-Increases

B:-Decreases

C:-remains the same

D:-increases and then decreases

Correct Answer:- Option-C

Question17:-Wet steam contains

A:-dry steam only

B:-water particles and steam

C:-only air

D:-superheated steam

Correct Answer:- Option-B

Question18:-Steam with dryness fraction less than 1 is called

A:-Dry steam

B:-Wet steam

C:-Superheated steam

D:-Latent heat

Correct Answer:- Option-B

Question19:-In throttling calorimeter steam passes through

A:-nozzle

B:-large opening

C:-Condenser

D:-Small orifice

Correct Answer:- Option-D

Question20:-Bucket calorimeter works on:

A:-heat balance principle

B:-Centrifugal principle

C:-Separating process

D:-Throttling principle

Correct Answer:- Option-A

Question21:-Stirling boiler uses

A:-One steam drum

B:-Two steam drums

C:-Three steam drums

D:-No drum

Correct Answer:- Option-C

Question22:-Babcock and Wilcox boiler is a

A:-Fire tube boiler

B:-Water tube boiler

C:-Electric boiler

D:-Vertical boiler

Correct Answer:- Option-B

Question23:-The function of an economiser is to

A:-Increase furnace size

B:-Heat feed water

C:-Reduce steam pressure

D:-Remove ash

Correct Answer:- Option-B

Question24:-Draught in a boiler furnace is required for

A:-Fuel combustion

B:-Water circulation

C:-Steam separation

D:-Feed supply

Correct Answer:- Option-A

Question25:-Lancashire boiler has

A:-One furnace tube

B:-Two furnace tubes

C:-Three furnace tubes

D:-No furnace tube

Correct Answer:- Option-B

Question26:-Cochran boiler is a

A:-Horizontal boiler

B:-Water tube boiler

C:-Multi-tubular vertical boiler

D:-Nuclear boiler

Correct Answer:- Option-C

Question27:-In multi pass boilers, gases change direction

A:-Once

B:-Several times

C:-Never

D:-Randomly

Correct Answer:- Option-B

Question28:-In locomotive boiler blast pipe improves

A:-Ash removal

B:-Water circulation

C:-Steam condensation

D:-Draught

Correct Answer:- Option-D

Question29:-External furnace boilers are generally used for

A:-Large steam production

B:-Small domestic work

C:-Cooking only

D:-None

Correct Answer:- Option-A

Question30:-The furnace of Cochran boiler is:

A:-Hemispherical

B:-Rectangular

C:-Cylindrical

D:-Flat

Correct Answer:- Option-A

Question31:-Scotch marine boiler is a

A:-Water tube boiler

B:-Fire tube boiler

C:-Electric boiler

D:-Once through boiler

Correct Answer:- Option-B

Question32:-Packaged boilers are easy to

A:-Install

B:-Operate

C:-Maintain

D:-All of the above

Correct Answer:- Option-D

Question33:-Which of the following boiler mountings is fitted slightly below the normal water level?

A:-Safety Valve

B:-Steam stop valve

C:-Fusible plug

D:-Pressure gauge

Correct Answer:- Option-C

Question34:-Which draught system uses both forced draught and induced draught fans?

A:-Natural draught

B:-Induced draught

C:-Balanced draught

D:-Steam jet draught

Correct Answer:- Option-C

Question35:-The ratio of actual evaporation to equivalent evaporation is known as:

A:-Boiler efficiency

B:-Factor of evaporation

C:-Steam quality factor

D:-Heat utilization factor

Correct Answer:- Option-B

Question36:-In a steam power plant, the economiser is installed:

A:-Before the boiler furnace

B:-Between boiler and turbine

C:-In the flue gas path before chimney

D:-After condenser

Correct Answer:- Option-C

Question37:-Foaming in boilers is mainly caused by:

A:-High temperature

B:-Excessive dissolved solids and oil impurities

C:-Low steam pressure

D:-Dryness fraction of steam

Correct Answer:- Option-B

Question38:-A Benson boiler operates:

A:-Below critical pressure

B:-At atmospheric pressure

C:-Above critical pressure

D:-Under vacuum condition

Correct Answer:- Option-C

Question39:-In a La Mount boiler has

A:-One drum

B:-Tw drum

C:-Three drum

D:-No drum

Correct Answer:- Option-A

Question40:-The equivalent evaporation of a boiler is defined as the amount of water evaporated:

A:-From and at 100^{o}C

B:-At atmospheric pressure only

C:-Into superheated steam

D:-At critical pressure

Correct Answer:- Option-A

Question41:-Which boiler accessory improves the efficiency of a boiler by preheating air?

A:-Superheater

B:-Air preheater

C:-Injector

D:-Fusible plug

Correct Answer:- Option-B

Question42:-Which mounting is used to indicate the water level inside the boiler?

A:-Pressure gauge

B:-Water level indicator

C:-Blow-off cock

D:-Feed check valve

Correct Answer:- Option-B

Question43:-Which device is used to supply water into a boiler?

A:-Injector

B:-Economiser

C:-Superheater

D:-Air preheater

Correct Answer:- Option-A

Question44:-In a fire-tube boiler:

A:-Water flows through tubes

B:-Flue gases flow through tubes

C:-Steam flows through tubes

D:-Air flows through tubes

Correct Answer:- Option-B

Question45:-Which mounting is used to remove mud and sediments from the boiler?

A:-Blow-off cock

B:-Feed check valve

C:-Safety valve

D:-Fusible plug

Correct Answer:- Option-A

Question46:-What is the pressure condition at the furnace exit in an induced draught system?

A:-Lower than atmospheric pressure

B:-Zero pressure

C:-Constant pressure

D:-Higher than atmospheric pressure

Correct Answer:- Option-A

Question47:-In a forced draught system, where is the fan generally positioned?

A:-After the economizer

B:-Inside the chimney

C:-At the bottom of the chimney

D:-Before the furnace near the air inlet

Correct Answer:- Option-D

Question48:-Why induced draught fans are manufactured using special materials?

A:-They are installed outdoors

B:-They operate at extremely high speeds

C:-They are exposed to hot and corrosive flue gases

D:-They handle high-pressure steam

Correct Answer:- Option-C

Question49:-In a balanced draught system, the furnace pressure is maintained:

A:-Exactly equal to 10 bar

B:-Slightly below atmospheric pressure

C:-At a highly negative value

D:-At a highly positive value

Correct Answer:- Option-B

Question50:-Frictional loss in a chimney depends on which of the following factors?

A:-Diameter of the chimney

B:-Length (Height) of the chimney

C:-Velocity of gases

D:-All of the above

Correct Answer:- Option-D

Question51:-What happens if the flue gas temperature rises beyond the condition for maximum discharge?

A:-The chimney height increases

B:-The draught increases

C:-The discharge decreases

D:-The discharge increases

Correct Answer:- Option-C

Question52:-Draught is commonly measured in:

A:-Joules

B:-kg/cm^2

C:-Pascals

D:-Newtons

Correct Answer:- Option-C

Question53:-The efficiency of a chimney is defined as the ratio of:

A:-Velocity of flue gases to velocity of air

B:-Actual draught to theoretical draught

C:-Energy of draught produced to the extra heat carried away by flue gases

D:-Heat used to produce draught to the total heat in fuel

Correct Answer:- Option-C

Question54:-Mechanical draught is generated using:

A:-High-pressure pumps

B:-Fans or blowers

C:-Chimney height

D:-Steam nozzles

Correct Answer:- Option-B

Question55:-Balanced draught is obtained by combining:

A:-Forced draught and natural draught

B:-Steam jet draught and induced draught

C:-Natural draught and steam jet draught

D:-Forced draught and induced draught

Correct Answer:- Option-D

Question56:-The process of converting water into steam by heating is called

A:-Condensation

B:-Evaporation

C:-Sublimation

D:-Distillation

Correct Answer:- Option-B

Question57:-Boiler efficiency is defined as:

A:-Ratio of heat lost to fuel supplied

B:-Ratio of steam pressure to temperature

C:-Ratio of heat utilized in steam generation to heat supplied by fuel

D:-Ratio of water supplied to steam generated

Correct Answer:- Option-C

Question58:-Which instrument is commonly used to measure boiler pressure?

A:-Thermometer

B:-Pressure gauge

C:-Hygrometer

D:-Barometer

Correct Answer:- Option-B

Question59:-Equivalent evaporation of a boiler is expressed in terms of:

A:-kg of steam per kg of fuel

B:-kg of water evaporated from and at 100^{o}C per kg of fuel

C:-kg of fuel per hour

D:-steam pressure generated

Correct Answer:- Option-B

Question60:-During a boiler trial, the main purpose is to determine :

A:-Colour of the flame

B:-Boiler performance under working conditions

C:-Quality of chimney

D:-Water hardness only

Correct Answer:- Option-B

Question61:-Which of the following is a major heat loss in boilers?

A:-Heat carried away by flue gases

B:-Heat absorbed by steam

C:-Heat stored in fuel

D:-Heat gained from atmosphere

Correct Answer:- Option-A

Question62:-Which boiler house record is most useful for analysing fuel economy and efficiency trends?

A:-Attendance register

B:-Water level logbook

C:-Fuel consumption and steam generation record

D:-Maintenance staff register

Correct Answer:- Option-C

Question63:-Which of the following heat losses cannot be completely avoided in a boiler even under ideal operating conditions?

A:-Heat loss due to incomplete combustion

B:-Heat loss due to flue gases

C:-Heat loss due to leakage of steam

D:-Heat loss due to unburnt fuel in ash

Correct Answer:- Option-B

Question64:-Lignite comes under the following category:

A:-Solid Fuel

B:-Liquid Fuel

C:-Gaseous Fuel

D:-Prepared Fuel

Correct Answer:- Option-A

Question65:-Liquid fuels have:
(i) Higher Calorific Value
(ii) Lower Calorific Value
(iii) Higher Efficiency

A:-Only (i)

B:-Only (ii)

C:-Only (i) and (iii)

D:-Only (ii) and (iii)

Correct Answer:- Option-C

Question66:-Which of the following has the highest calorific value?

A:-Producer gas

B:-Coal gas

C:-Blast Furnace gas

D:-Mond Gas

Correct Answer:- Option-B

Question67:-Gaseous fuels mainly consists of:

A:-Methane

B:-Ethane

C:-CO_2

D:-CO

Correct Answer:- Option-A

Question68:-The process of passing air and a large amount of steam over waste coal at about 650^oC is known as:

A:-Coal gas

B:-Producer gas

C:-Water gas

D:-Mond gas

Correct Answer:- Option-D

Question69:-The principal constituents of a fuel are:

A:-Oxygen and Hydrogen

B:-Carbon and Hydrogen

C:-Oxygen and Sulphur

D:-Sulphur and Hydrogen

Correct Answer:- Option-B

Question70:-Which instrument is used for finding the higher calorific value of solid and liquid fuels?

A:-Bomb calorimeter

B:-Boy's gas calorimeter

C:-Junkers calorimeter

D:-All of the above

Correct Answer:- Option-A

Question71:-Which of the following statement is incorrect?

A:-The liquid fuels have high calorific value than solid fuels

B:-The liquid fuels consists of hydrocarbons

C:-The solid fuels have higher efficiency than liquid fuels

D:-A good fuel should have low ignition point

Correct Answer:- Option-C

Question72:-Which unit is standard for expressing the calorific value of a gaseous fuel?

A:-Watt/sec.

B:-Kelvin/kg

C:-KJ/Kg

D:-KJ/m^3

Correct Answer:- Option-D

Question73:-According to Dulong's formula, which element contributes most significantly to a fuels high calorific value?

A:-Hydrogen

B:-Nitrogen

C:-Oxygen

D:-Ash

Correct Answer:- Option-A

Question74:-Bank firing in boiler is carried out to:

A:-Remove ash deposit completely

B:-Increase furnace temperature rapidly

C:-Keep the boiler ready for quick start

D:-Improve chimney draft

Correct Answer:- Option-C

Question75:-Which mode of heat transfer takes place through vacuum?

A:-Conduction

B:-Convection

C:-Radiation

D:-Diffusion

Correct Answer:- Option-C

Question76:-Zeroth Law of Thermodynamics defines:

A:-Internal Energy

B:-Enthalpy

C:-Temperature

D:-Pressure

Correct Answer:- Option-C

Question77:-Minimum air required for complete combustion of solid or liquid fuel containing constituents in the ratio of C:H_2:S:O_2

A:- $\frac{\text{Air}}{\text{kg fuel}} = \frac{100}{21}\left[\frac{8}{3}C + 8\left(\text{H}_2 - \frac{\text{O}_2}{8}\right) + \text{S}\right]$

B:- $\frac{\text{Air}}{\text{kg fuel}} = \frac{100}{23}\left[\frac{8}{3}C + 8\left(\text{H}_2 - \frac{\text{O}_2}{8}\right) + \text{S}\right]$

C:- $\frac{\text{Air}}{\text{kg fuel}} = \frac{100}{23}\left[\frac{3}{8}C + 8\left(\text{H}_2 - \frac{\text{O}_2}{8}\right) + \text{S}\right]$

D:- $\frac{\text{Air}}{\text{kg fuel}} = \frac{100}{23}\left[\frac{8}{3}C + 8(\text{H}_2 - O_2) + \text{S}\right]$

Correct Answer:- Option-B

Question78:-The quantity of air in kg in excess of the theoretical minimum air required for complete combustion of the solid and liquid fuels is called _____.

A:-excess air

B:-minimum air required

C:-stoichiometric air-fuel ratio

D:-actual air

Correct Answer:- Option-A

Question79:-Air leakage in an air preheater (APH) is completely determined by comparing:

A:-Steam pressure at inlet and outlet

B:-Fuel consumption before and after combustion

C:-Oxygen (O_2) percentage in flue gas at inlet and outlet

D:-Boiler drum temperature and furnace temperature

Correct Answer:- Option-C

Question80:-In flue gas analysis, Orsat apparatus is used to measure:

A:-Fuel viscosity

B:-Boiler pressure

C:-Composition of flue gases

D:-Calorific value

Correct Answer:- Option-C

Question81:-Which of the following factors does the quantity of heat transferred depends on?
(i) Mass of the substance
(ii) Specific heat of the substance
(iii) Temperature difference

A:-Only (i)

B:-Only (ii) and (iii)

C:-Only (i) and (ii)

D:-All of the above (i), (ii), (iii)

Correct Answer:- Option-D

Question82:-If carbon burns completely, the product formed is:

A:-CO

B:-CO_2

C:-SO_2

D:-CH_4

Correct Answer:- Option-B

Question83:-The percentage of excess air supplied can be determined from:

A:-Steam pressure analysis

B:-Flue gas analysis

C:-Fuel temperature

D:-Boiler capacity

Correct Answer:- Option-B

Question84:-Feed water treatment in the boiler is done to overcome _____.

A:-Scale formation

B:-Corrosion

C:-Cavitation

D:-Both (1) and (2)

Correct Answer:- Option-D

Question85:-Hardness of water indicates:

A:-its pH value

B:-presence of scale-forming salts

C:-presence of insoluble compounds

D:-presence of ions

Correct Answer:- Option-B

Question86:-Permanent hardness of feed water can be removed by _____.

A:-Filtration

B:-Freezing

C:-Chemical treatment

D:-Boiling

Correct Answer:- Option-C

Question87:-Deaeration of feed water is necessary to reduce:

A:-pH value

B:-Heat transfer coefficient

C:-Corrosion caused by oxygen

D:-Weight of water

Correct Answer:- Option-C

Question88:-The hardness of feed water is measured in _____ unit.

A:-Parts per million

B:-milli gram

C:-Jule

D:-mol

Correct Answer:- Option-A

Question89:-Traditional chemical water softening process is,

A:-Atomisation

B:-Lime-soda

C:-Ionisation

D:-Circulation

Correct Answer:- Option-B

Question90:-Foaming of boiler feed water indicates the presence of,

A:-Oil

B:-Silica

C:-Clay

D:-Chlorides

Correct Answer:- Option-A

Question91:-Temporary hardness of feed water can be removed by _____.

A:-Filtration

B:-Freezing

C:-Chemical treatment

D:-Boiling

Correct Answer:- Option-D

Question92:-Treatment method that removes impurities through temperature rise of feed water is

A:-Mechanical treatment

B:-Heat treatment

C:-Filter treatment

D:-Chemical treatment

Correct Answer:- Option-B

Question93:-A mechanical pressure filter removes suspended matter from feed water by:

A:-Trapping particles within a porous medium

B:-Increasing boiling point

C:-Osmosis

D:-Chemical reduction

Correct Answer:- Option-A

Question94:-Final stage of erosion failure in a boiler tube is,

A:-High Velocity impingment

B:-Wall thinning

C:-Rupture or leakage

D:-Material wear

Correct Answer:- Option-C

Question95:-Expansion of TDS in boiler feed water is:

A:-Total Dissolved Solids

B:-Total Dissolved Solution

C:-Total Dissolved Scales

D:-Total Dissolved Steam

Correct Answer:- Option-A

Question96:-The Boilers Act came into force in the year:

A:-1912

B:-1923

C:-1928

D:-1933

Correct Answer:- Option-B

Question97:-Boiler accidents must be reported under:

A:-Section 12

B:-Section 10

C:-Section 18

D:-Section 20

Correct Answer:- Option-C

Question98:-The Boilers Act was enacted mainly to ensure:

A:-Fuel economy

B:-Boiler safety

C:-Labour welfare

D:-Industrial safety

Correct Answer:- Option-B

Question99:-The main purpose of IBR is to:

A:-Standardize boiler inspection and safety

B:-Regulate factory wages

C:-Increase steam production

D:-Control fuel consumption

Correct Answer:- Option-A

Question100:-The hydraulic test pressure is usually:

A:-Zero pressure

B:-Less than working pressure

C:-Equal to working pressure

D:-Greater than working pressure

Correct Answer:- Option-D