

## PROVISIONAL ANSWER KEY

Question 19/2024/OL

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Exam: Boiler Attendant

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Department Kerala State Bamboo Corporation Ltd

Question1:-If a metre is divided into hundred equal parts, each part is equal to :

A:-micrometre

B:-centimetre

C:-millimetre

D:-decimetre

Correct Answer:- Option-B

Question2:-Pascal is the unit of

A:-Pressure

B:-Energy

C:-Work

D:-Power

Correct Answer:- Option-A

Question3:-What is the dimensional formula of power?

A:- $ML^2T^{-3}$

B:- $ML^2T^2$

C:- $ML^2T^4$

D:- $LT^{-2}$

Correct Answer:- Option-A

Question4:-Which among the following is the correct relation between absolute pressure, atmospheric pressure and gauge pressure?

A:-  $P_{abs} = P_{atm} - P_{gauge}$

B:-  $P_{abs} = P_{atm} + P_{gauge}$

C:-  $P_{abs} = P_{atm} / P_{gauge}$

D:-  $P_{abs} = P_{atm} \times P_{gauge}$

Correct Answer:- Option-B

Question5:-Which among the following is the unit of force (in SI system)?

A:-Pascal

B:-Newton

C:-Kilogram

D:-Joules

Correct Answer:- Option-B

Question6:-Pyrometer is used to measure

A:-Pressure

B:-Viscosity

C:-Temperature

D:-Humidity

Correct Answer:- Option-C

Question7:-Which among the following is the unit of specific heat in SI system?

A:-J

B:-J/kg

C:-J/kg/K

D:-J/kgK

Correct Answer:- Option-D

Question8:-The amount of heat energy required to raise the temperature of one kilogram of a substance through one degree Celsius is known as

A:-Latent Heat

B:-Sensible heat

C:-Specific heat

D:-Heat of sublimation

Correct Answer:- Option-C

Question9:-One bar is equal to

A:- $10^5 N / m^2$

B:- $10^3 N / m^2$

C:- $10 N / m^2$

D:- $10^6 N / m^2$

Correct Answer:- Option-A

Question10:-The standard atmospheric pressure is taken as

A:-760 mm of Hg

B:-730 mm of Hg

C:-1000 mm of Hg

D:-950 mm of Hg

Correct Answer:- Option-A

Question11:-The saturated liquid line and saturated vapour line meets at

A:-Ice point

B:-Triple point

C:-Critical point

D:-Boiling point

Correct Answer:- Option-C

Question12:-Heating dry steam above its saturation temperature is known as

A:-Sublimation

B:-Superheating

C:-Liquefaction

D:-None of these

Correct Answer:- Option-B

Question13:-The steam having particles of water in suspension is termed as

A:-Dry steam

B:-Superheated steam

C:-Wet steam

D:-None of these

Correct Answer:- Option-C

Question14:-The amount of heat absorbed to evaporate 1 kg of water from its saturation temperature, without change of temperature is known as

A:-Sensible heat

B:-Latent heat of vaporization

C:-Enthalpy of steam

D:-None of these

Correct Answer:- Option-B

Question15:-If the pressure is increased the boiling temperature of water

A:-Increases

B:-Decreases

C:-Doesn't change

D:-None of these

Correct Answer:- Option-A

Question16:-Which among the following is not used for measuring dryness fraction?

A:-Bucket calorimeter

B:-Separating calorimeter

C:-Separating and throttling calorimeter

D:-Bomb calorimeter

Correct Answer:- Option-D

Question17:-Specific enthalpy of wet steam is given by

A:  $-h = h_f - x h_{fg}$

B:  $-h = h_f + x h_{fg}$

C:  $-h = h_f + h_{fg}$

D:  $-h = x h_f + h_{fg}$

Correct Answer:- Option-B

Question18:-The numerical amount by which the temperature of a superheated vapour exceeds the saturation temperature is known as

A:-Latent heat

B:-Sensible heat

C:-Degree of super heat

D:-None of these

Correct Answer:- Option-C

Question19:-The value of dryness fraction for dry steam is

A:-1

B:-0

C:-0.5

D:-0.25

Correct Answer:- Option-A

Question20:-The specific volume of water \_\_\_\_\_ when heated from 0°C.

A:-Increases steadily

B:-Decreases steadily

C:-First decreases and then increases

D:-First increases and then decreases

Correct Answer:- Option-C

Question21:-The steam generators designed to operate above critical pressure is known as

A:-Once through boiler

B:-Sub Critical boiler

C:-Drum boiler

D:-All of the above

Correct Answer:- Option-A

Question22:-\_\_\_\_\_ is an example for water tube boiler.

A:-Cornish

B:-Lancashire

C:-Sterling

D:-Cochran

Correct Answer:- Option-C

Question23:-Boiler rating usually defined in terms of

A:-Maximum temperature of steam in K

B:-Heat transfer rate in kJ/h

C:-Heat transfer area in  $m^2$

D:-Steam output in kg/h

Correct Answer:- Option-D

Question24:-Steam power plants work on which cycle

A:-Otto cycle

B:-Carnot cycle

C:-Diesel cycle

D:-Rankine cycle

Correct Answer:- Option-D

Question25:-Draught in locomotive boiler is produced with the help of

A:-Steam jet

B:-Chimney

C:-Draught Fan

D:-Damper

Correct Answer:- Option-A

Question26:-Water circulation in Babcock Wilcox boiler is maintained by

A:-Conductive current

B:-Convective current

C:-Radiative current

D:-All of the above

Correct Answer:- Option-B

Question27:-\_\_\_\_\_ is an example for high pressure boiler.

A:-La Mont

B:-Benson

C:-Loefeller

D:-All of the above

Correct Answer:- Option-D

Question28:-Blowing down of boiler water is the process of

A:-Reducing boiler pressure

B:-Increasing the steam pressure

C:-Controlling the solid concentration in the boiler water

D:-None of the above

Correct Answer:- Option-C

Question29:- \_\_\_\_\_ is the platform in the furnace on which fuel is burnt.

A:-Ash pit

B:-Grate

C:-Fire Door

D:-None of the above

Correct Answer:- Option-B

Question30:-Which of the following boiler has single internal flue tube for hot gas passage?

A:-Cochran

B:-Lancashire

C:-Cornish

D:-Locomotive

Correct Answer:- Option-C

Question31:- \_\_\_\_\_ is an example for low pressure boiler.

A:-Babcock Wilcox

B:-Sterling

C:-Scotch Marine

D:-All of the above

Correct Answer:- Option-C

Question32:- \_\_\_\_\_ is a part of steam generator in which phase change occurs.

A:-Super heater

B:-Evaporator

C:-Economiser

D:-Air pre heater

Correct Answer:- Option-B

Question33:-Which of the following is a boiler accessories?

A:-Economiser

B:-Fusible plug

C:-Pressure gauge

D:-Blow-off cock

Correct Answer:- Option-A

Question34:-Which component on boiler is used to increase the temperature of steam above saturation temperature?

A:-Air Preheater

B:-Evaporator

C:-Super heater

D:-None of the above

Correct Answer:- Option-C

Question35:-Regarding fusible plugs, which of the following claims is FALSE?

A:-When the water level is low, it puts out the fire

B:-It keeps the boiler from becoming too hot

C:-It should melt at very high temperatures

D:-This requires renewal after a certain amount of time

Correct Answer:- Option-C

Question36:-An air preheater

A:-expands the boiler's evaporative capacity

B:-improves the boiler's efficiency

C:-enables the burning of inferior fuel

D:-all of the above

Correct Answer:- Option-D

Question37:-Which of the following feed pump-related assertions is TRUE?

A:-It serves as the boiler's feed water delivery system

B:-To remove steam from the boiler, use this device

C:-It is a boiler mounting

D:-All of the above

Correct Answer:- Option-A

Question38:-What is the number of level indications in a boiler's water level indicator?

A:-4

B:-3

C:-2

D:-1

Correct Answer:- Option-C

Question39:-What is the purpose of the boiler's pressure gauge?

A:-To display the steam pressure as gauge pressure

B:-To display the steam pressure as absolute pressure

C:-To display the water pressure as gauge pressure

D:-To display the water pressure as absolute pressure

Correct Answer:- Option-A

Question40:-A gauge similar to the steam stop valve is

A:-Feed Check Valve

B:-Blow Down Valve

C:-Junction Valve

D:-Safety Valve

Correct Answer:- Option-C

Question41:-In essence, a feed check valve is a \_\_\_\_\_ way valve.

A:-Two

B:-One

C:-Three

D:-None of the above

Correct Answer:- Option-B

Question42:-What is the purpose of a boiler's blowdown valve?

A:-To get rid of sludge

B:-To get rid of ash

C:-To get rid of steam

D:-All of the above

Correct Answer:- Option-A

Question43:-What a safety valve does is?

A:-Protect the firebox crown plate or fire tube from burning

B:-Regulates the flow of water in to the boiler

C:-Maintain constant pressure on the delivery side

D:-Regulates excessive steam pressure inside the boiler

Correct Answer:- Option-D

Question44:-Which of the following is not a boiler mounting?

A:-Pressure gauge

B:-Steam stop valve

C:-Fusible plug

D:-None of the above

Correct Answer:- Option-D

Question45:-The function of \_\_\_\_\_ is to separate the water particle in suspension that are carried by the steam coming from the boiler.

A:-Steam trap

B:-Air preheater

C:-Steam separator

D:-Feed water pump

Correct Answer:- Option-C

Question46:-Turbine draught is another name for



A:-Induced draught

B:-Forced draught

C:-Mechanical draught

D:-Balanced draught

Correct Answer:- Option-B

Question47:-The draught system that is mostly used by Modern boilers are of

A:-Natural draught firing

B:-Balanced draught firing

C:-Forced draught firing

D:-Induced draught firing

Correct Answer:- Option-B

Question48:-A locomotive boiler generally utilises a

A:-Forced steam jet draught

B:-Forced draught

C:-Induced steam jet draught

D:-Induced draught

Correct Answer:- Option-C

Question49:-A chimney is 20 m high and the temperature of hot gases inside the chimney is 327°C. The temperature of outside air is 27°C and furnace is supplied with 10 kg of coal burnt. Then, the draught head in metres of hot gases is

A:-18.18 m

B:-9.52 m

C:-20.16 m

D:-10.74 m

Correct Answer:- Option-A

Question50:-In comparing an induced draught fan with respect to a forced draught fan, the operation and maintenance cost of induced draught fan will be

A:-Lower for same conditions

B:-Higher for same conditions

C:-Almost same

D:-None of these

Correct Answer:- Option-B

Question51:-Draught loss is due to

A:-Head loss due to fuelled resistance

B:-Loss due to friction in the gas flow circuit

C:-Due to flow resistance offered by chimney

D:-All of these

Correct Answer:- Option-D

Question52:-An induced draught blower is usually placed

- A:-Near to the base of the boiler
- B:-Near to the base of the chimney
- C:-Near to the base of the economiser
- D:-Near to the base of the superheater

Correct Answer:- Option-B

Question53:-Read the statements:

- (i) Induced draught blowers are larger in size in comparison to Forced draught fan
- (ii) Forced draught fans requires more power in comparison to induced draught fan
- (iii) Induced draught fans require special bearings to handle the flue gas
- (iv) Forced draught fans can be 1.3 times in size in comparison to Induced draught fan

Which of the given statement are true?

- A:-Statements 1, 2, 3 and 4
- B:-Statements 3 and 4 only
- C:-Statements 1 and 3 only
- D:-Statements 2, 3 and 4

Correct Answer:- Option-C

Question54:-Boilers when operating in balanced draught the pressure will be

- A:-Slightly positive gauge pressure
- B:-Atmospheric pressure
- C:-Slightly negative gauge pressure
- D:-None of these

Correct Answer:- Option-C

Question55:-Which of the below mentioned phrase is not true with respect to natural draught system?

- A:-Long chimney
- B:-Less maintenance required
- C:-No flexibility in operation
- D:-High efficiency

Correct Answer:- Option-D

Question56:-The evaporative capacity of a boiler may be expressed in terms of

- A:-kg of steam/h
- B:-kg of steam/h/ $m^2$  of heating surface
- C:-kg of steam/kg of fuel fired
- D:-All of the above

Correct Answer:- Option-D

Question57:-In the following statements regarding direct method for boiler efficiency which option is not true?

A:-Plant people can evaluate quickly the efficiency of boilers

B:-Calculate various losses accountable for various efficiency levels

C:-Require few parameters for computation

D:-Needs few instruments for monitoring

Correct Answer:- Option-B

Question58:-The efficiency which represents the effectiveness of the burner only and relates to its ability to completely burn the fuel

A:-Combustion Efficiency

B:-Thermal Efficiency

C:-Fuel to steam Efficiency

D:-Boiler Efficiency

Correct Answer:- Option-A

Question59:-The instrument which regulates the flow of water under pressure to the boiler drum is

A:-Stop valve

B:-Junction valve

C:-Feed Check Valve

D:-Flow regulator valve

Correct Answer:- Option-C

Question60:-Whenever boiler cleaning and inspection are due water inside the tubes and in the boiler, drum can be completely drained by operating the

A:-Blow off Cock

B:-Relief valve

C:-Fusible plug

D:-Drain valve

Correct Answer:- Option-A

Question61:-The ratio of heat received by 1 kg of water under working conditions to that received by 1 kg of water evaporated from and at 100°C

A:-Evaporation Constant

B:-Factor of Evaporation

C:-Equivalent Evaporation

D:-None of these

Correct Answer:- Option-B

Question62:-The equivalent evaporation (kg/h) of a boiler producing 1200 kg/h of steam with enthalpy content of 2543 kJ/kg from feed water at 70°C, Take enthalpy

of vaporization of water at  $100^{\circ}\text{C}=2250 \text{ kJ/h}$

A:-1200

B:-1272

C:-1334

D:-1468

Correct Answer:- Option-A

Question63:-Which of the mentioned statement is not generally a result of boiler trial?

A:-Steam generation capacity

B:-Boiler safety check

C:-Heat balance sheet

D:-Thermal efficiency of boiler

Correct Answer:- Option-B

Question64:-The lowest grade coal containing moisture as high as 30% and high volatile matter is

A:-Bituminous coal

B:-Anthracite

C:-Lignite

D:-Peat

Correct Answer:- Option-C

Question65:-The analysis which gives the chemical elements that comprise the coal substance, together with ash and moisture is known as

A:-Chemical analysis

B:-Ultimate analysis

C:-Proximate analysis

D:-Fuel analysis

Correct Answer:- Option-B

Question66:-The primary component of Liquefied Petroleum Gas is

A:-Butane

B:-Propane

C:-Ethane

D:-Methane

Correct Answer:- Option-A

Question67:-Bomb calorimeter is one of the ways to get the heating value of solid and liquid fuels when burnt at

A:-Constant Pressure

B:-Constant Volume

C:-Constant Entropy

D:-Constant Enthalpy

Correct Answer:- Option-B

Question68:-Which is the best suited fuels for CI engine, considering knocking tendency?

A:-Naphthenes

B:-Olefins

C:-Paraffins

D:-Aromatics

Correct Answer:- Option-C

Question69:-Gasoline has a specific gravity in the range of about

A:-0.55 - 0.62

B:-0.70 - 0.78

C:-0.82 - 0.86

D:-0.63 - 0.68

Correct Answer:- Option-B

Question70:-The gas obtained by partial combustion of coke or coal in the presence of air and steam mixture is

A:-Producer gas

B:-Coal gas

C:-Coke oven gas

D:-Water gas

Correct Answer:- Option-A

Question71:-Calorific value obtained from a bomb calorimeter is

A:-Lower calorific value

B:-Higher calorific value

C:-Enthalpy of formation

D:-Enthalpy of reactants

Correct Answer:- Option-B

Question72:-Which of the following statement regarding gaseous fuel is not true in comparison to solid or liquid fuels?

A:-The rate of combustion and temperature can be easily controlled

B:-Combustion efficiency is more due to the necessity of minimum amount of excess air

C:-They have low heat content

D:-They can be directly used as fuels in internal combustion engines

Correct Answer:- Option-C

Question73:-The fuel which is the cleanest of the fossil fuel is

A:-Gasoline

B:-Kerosene

C:-Liquefied Petroleum Gas

D:-Natural Gas

Correct Answer:- Option-D

Question74:- \_\_\_\_\_ moles of nitrogen are present for every mole of oxygen in the air.

A:-3.76

B:-13.6

C:-37.6

D:-78

Correct Answer:- Option-A

Question75:-Density is measured by an instrument called

A:-Barometer

B:-Hydrometer

C:-Pyrometer

D:-Oxymeter

Correct Answer:- Option-B

Question76:-Flash point for furnace oil is

A:-100°C

B:-6°C

C:-16°C

D:-66°C

Correct Answer:- Option-D

Question77:-The pour point of a fuel is the lowest temperature at which it will pour or flow when \_\_\_\_\_ under prescribed conditions.

A:-Pressurized

B:-Heated

C:-Cooled

D:-Constant temperature

Correct Answer:- Option-C

Question78:-The primary function of burner is to \_\_\_\_\_ fuel to millions of small droplets.

A:-Burn the

B:-Atomise

C:-Vapourise

D:-All the above

Correct Answer:- Option-B

Question79:-Inspection procedure of boilers for the renewal of certificates is to apply along with fees as per \_\_\_\_\_ before expiry of the certificate.

A:-Annexure C

B:-Annexure 2

C:-Annexure A

D:-Annexure 2B

Correct Answer:- Option-A

Question80:-The higher calorific value of fuel whose composition is C=86%, S=6%, incombustible=8%

A:-will be higher than its lower calorific value

B:-will be lower than its lower calorific value

C:-will be same as than its lower calorific value

D:-zero

Correct Answer:- Option-C

Question81:-Bomb calorimeter is used to determine the calorific value of

A:-Solid fuels only

B:-Solid as well as liquid fuels

C:-Liquid fuels only

D:-Gaseous fuels

Correct Answer:- Option-B

Question82:-Orsat apparatus is used to determine

A:-Products of all constituents of fuel combustion by weight

B:-Products of only dry constituents of fuel combustion by volume

C:-Products of all constituents of fuel combustion by volume

D:-Products of only dry constituents of fuel combustion by weight

Correct Answer:- Option-B

Question83:-Proximate analysis of fuel means, determination

A:-Lower calorific value

B:-Higher calorific value

C:-Percentages of carbon, hydrogen, nitrogen, sulfur and moisture

D:-Percentage of fixed carbon, ash, volatile matter and moisture

Correct Answer:- Option-D

Question84:-The ratio of specific heats of gas at constant pressure and constant volume is

- A:-always constant
- B:-always varies with pressure
- C:-always varies with temperature
- D:-none of the above

Correct Answer:- Option-C

Question85:-The specific volume of water when heated from 0 degree C

- A:-First increase and then decrease
- B:-First decrease and then increase
- C:-Increase steadily
- D:-Decrease steadily

Correct Answer:- Option-B

Question86:-The temperature of flue gases entering the air preheater of steam generator installation is recommended to be

- A:-less than wet bulb temperature
- B:-more than wet bulb temperature
- C:-less than dew point temperature
- D:-more than dew point temperature

Correct Answer:- Option-D

Question87:-Turbidity in a boiler feed water causes

- A:-Scale formation
- B:-Corrosion
- C:-Sludge
- D:-Embrittlement

Correct Answer:- Option-C

Question88:-Thermal conductivity of water

- A:-First increases with temperature and then decreases with temperature
- B:-First decreases with temperature and then increases with temperature
- C:-Increases steadily
- D:-Does not depend on temperature

Correct Answer:- Option-A

Question89:-Which is not the desirable property of a good fuel?

- A:-Economical in cost
- B:-Minimum sulphur content
- C:-High ignition point



D:-High heating value

Correct Answer:- Option-C

Question90:-Oxygen can be removed from the boiler feed water by the addition of

A:-Alum

B:-Calcium carbonate

C:-Sodium sulphite

D:-Cuprous chloride

Correct Answer:- Option-C

Question91:-What salts of calcium and magnesium cause temporary hardness of boiler feed water?

A:-Bicarbonate

B:-Chlorides

C:-Nitrates

D:-Manganese

Correct Answer:- Option-A

Question92:-The economiser unit of a boiler is located between

A:-Forced draught fan and furnace

B:-Superheater and air preheater

C:-Air preheater and chimney

D:-Furnace and superheater

Correct Answer:- Option-B

Question93:-What is the function of a steam trap?

A:-To arrest water particle going along with steam

B:-To drain off water resulting from partial condensation of steam in pipes

C:-To prevent steam from leaking out from the boiler

D:-To regulate the steam flow rate from the boiler

Correct Answer:- Option-B

Question94:-Superheating of steam is done at

A:-Constant volume

B:-Constant temperature

C:-Constant pressure

D:-Constant entropy

Correct Answer:- Option-C

Question95:-The maximum energy loss in a boiler occurs due to

A:-Unburnt carbon in ash

B:-Incomplete combustion

C:-Ash content

D:-Flue gases

Correct Answer:- Option-D

Question96:-Which of the following fitting is a boiler mounting?

A:-Superheater

B:-Economiser

C:-Feed check valve

D:-Air preheater

Correct Answer:- Option-C

Question97:-Dryness fraction of wet steam is given by

A:-ratio of mass of dry steam to the mass of suspended liquid water

B:-Ratio of mass of suspended liquid water to mass of dry steam

C:-Ratio of mass of dry steam to the sum of mass of suspended liquid water and dry steam

D:-Ratio of sum of mass of suspended liquid water and dry steam to the mass of dry steam

Correct Answer:- Option-C

Question98:-If a fan is installed near the base of a boiler to force air through fuel and another fan is installed near the base of the chimney to suck the gas from boiler, the type of draught produced is called

A:-Forced draught

B:-Induced draught

C:-Natural draught

D:-Balanced draught

Correct Answer:- Option-D

Question99:-A Benson boiler requires

A:-No drum

B:-One drum

C:-Two drum

D:-Three drum

Correct Answer:- Option-A

Question100:-Equivalent evaporation means

A:-Amount of water evaporated per kg of fuel burnt

B:-Amount of steam produced per kg/hr

C:-The evaporation of 15.563 kg of water per hour from and at 100 degree C

D:-Amount of water evaporated from and at 100 degree in to dry and saturated steam at normal atmospheric pressure

Correct Answer:- Option-D