

## FINAL ANSWER KEY

Question 104/2023/OL

Paper Code:

Category 156/2022

Code:

Exam: Boiler Attendant

Date of Test 04-07-2023

Department Pharmaceutical Corporation Kerala Ltd

Question1:-If a pure substance in the gaseous phase is to be liquefied, it must first be cooled below the

A:-triple point

B:-critical state

C:-saturated vapor line

D:-saturated liquid line

Correct Answer:- Option-B

Question2:-In Mollier diagram, Isobars

A:-are parabolic

B:-are parallel straight lines

C:-diverge from one another

D:-converge gradually

Correct Answer:- Option-C

Question3:-The density difference between saturated liquid and saturated vapor is \_\_\_\_\_ at critical state.

A:-Unity

B:-Zero

C:-Maximum

D:-Minimum

Correct Answer:- Option-B

Question4:-Which of the following is the equation for heat of superheated steam?

A:- $h_{sup} = h_f + h_{fg} + c_{ps} \log_e \frac{T_{sup}}{T_s}$

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

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

D:- $h_{sup} = h_f + x h_{fg} + c_{ps} \log_e \frac{T_s}{273}$

Correct Answer:- Option-A

Question5:-The throttling calorimeter is used for measuring

A:-dryness fraction of high-pressure steam

- B:-very low dryness fraction upto 0.7
- C:-very high dryness fraction upto 0.98
- D:-dryness fraction of low-pressure steam

Correct Answer:- Option-C

Question6:-Entropy of 1 kg of wet steam is given by

- A:- $s_f + \frac{x h_{fg}}{T_s}$
- B:- $s_g + \frac{x h_{fg}}{T_s}$
- C:- $s_f + \frac{h_{fg}}{T_s}$
- D:- $s_f + c_{ps} \log_e \frac{T_{sup}}{T_s}$

Correct Answer:- Option-A

Question7:-A rigid vessel with a volume of  $10m^3$  contains a water vapor mixture at 400 kPa at 60 percent quality. The pressure is lowered to 300 kPa by colling the vessel. Find mass of gas (mg) at state 2.

- A:-16.5 kg
- B:-19.5 kg
- C:-23.8 kg
- D:-29.2 kg

Correct Answer:- Option-A

Question8:-The point that connects saturated-liquid line to saturated vapor line is called

- A:-Triple point
- B:-Critical point
- C:-Superheated point
- D:-Compressed liquid point

Correct Answer:- Option-A

Question9:-The specific volume of water at 200°C and at 80 percent quality

- A:-0.06  $m^3/kg$
- B:-0.08  $m^3/kg$
- C:-0.1  $m^3/kg$
- D:-0.12  $m^3/kg$

Correct Answer:- Option-C

Question10:-Two kilograms of steam are contained in a piston cylinder arrangement. The 20 mm diameter 40 kg piston is allowed to rise with no friction until the temperature reaches 260°C. The final volume is

- A:-0.13  $m^3$
- B:-0.29  $m^3$
- C:-0.34  $m^3$

D:-0.39  $m^3$

Correct Answer:- Option-B

Question11:-The reading of pressure gauge fitted on a vessel is 25 bar. The atmospheric pressure is 1.03 bar and the value of  $g$  is  $9.81 m/s^2$ . The absolute pressure in the vessel is

A:-23.97 bar

B:-25 bar

C:-26.03 bar

D:-34.84 bar

Correct Answer:- Option-C

Question12:-The standard atmospheric pressure is 762 mm of Hg. At a specific location, barometer reads 700 mm of Hg. At this place, what does an absolute pressure at 380 mm of Hg corresponds to

A:-320 mm of Hg vacuum

B:-382 mm of Hg vacuum

C:-62 mm of Hg vacuum

D:-62 mm of Hg gauge

Correct Answer:- Option-A

Question13:-Where can a piezometer be not used for pressure measurement in pipes?

A:-The pressure difference is low

B:-The velocity is high

C:-The fluid in the pipe is as gas

D:-The fluid in the pipe is highly viscous

Correct Answer:- Option-C

Question14:-Elastic elements used for measurement of force give

A:-high sensitivity and slow response if they are stiff

B:-low sensitivity and fast response if they are stiff

C:-low sensitivity and slow response if they are stiff

D:-none of the above

Correct Answer:- Option-B

Question15:-Electromagnetic type of balances

A:-are more sensitive to environmental effects

B:-give an output which can be used for display, recording and control

C:-are of large size and have slow response

D:-cannot be operated from remote location

Correct Answer:- Option-B

Question16:-Purely mechanical instruments cannot be used for dynamic measurements because they have

A:-high inertia

B:-high response time

C:-large time constant

D:-all the above

Correct Answer:- Option-D

Question17:-The temperature range in which radiation Pyrometers are used

A:-0 - 500°C

B:-500 - 1000°C

C:-250 - 500°C

D:-1200 - 2500°C

Correct Answer:- Option-D

Question18:-The temperature probes for high-speed flows measure

A:-stagnation temperature

B:-static temperature

C:-recovery temperature

D:-none of the above

Correct Answer:- Option-C

Question19:-The property desirable for a manometric fluid is

A:-high viscosity

B:-high coefficient of thermal expansion

C:-low vapor pressure

D:-corrosiveness and stickiness

Correct Answer:- Option-C

Question20:-The bulb and capillary of a pressure thermometer using mercury is made up of

A:-stainless steel

B:-copper

C:-alloys of copper

D:-none of the above

Correct Answer:- Option-A

Question21:-The safety regulations followed by boilers in India

A:-ASTM

B:-BS

C:-DIN

D:-IBR

Correct Answer:- Option-D

Question22:-In the event that the water level goes below the safe level, which of the following fittings is used to extinguish the boiler furnace fire?

A:-feed check valve

B:-safety valve

C:-fusible plug

D:-blow-off cock

Correct Answer:- Option-C

Question23:-The external inspection of a boiler ensures

A:-the furnace refractory is in order

B:-the valves are in good operating condition

C:-the tubes are free of scale

D:-all the above

Correct Answer:- Option-B

Question24:-The operation for opening up a boiler into a pressured steam header is referred to as "cutting" the boiler into the header according to which ASME code?

A:-ASME Section I

B:-ASME Section II

C:-ASME Section IV

D:-ASME Section VII

Correct Answer:- Option-D

Question25:-It is beneficial to \_\_\_\_\_ before removing a boiler from service for maintenance purposes

A:-drain the unit before water cools to ambient temperature

B:-use soot blowers and clean the fireside well

C:-inform the chief inspector

D:-force cool the unit with post purge air

Correct Answer:- Option-B

Question26:-Statement 1 - Sudden surging/spouting of water into the outlet of the boiler is called priming

Statement 2 - Tiny bubbles forming inside a steam boiler is known as carry over.

Which of the above are true?

A:-Statement 1

B:-Statement 2

C:-Both are correct

D:-Both are incorrect

Correct Answer:- Option-A

Question27:-Out of the following what are the possible causes for priming.

1. Too high level of water
2. Uneven fire distribution
3. Load surging

A:-None of the above

B:-All of the above

C:-Only 3

D:-Only 2

Correct Answer:- Option-B

Question28:-Out of the following, which are the disadvantages of reverse osmosis feed water treatment

1. not fit for high pressure operations
2. chances of biofouling
3. short cleaning intervals
4. does not reject all solids

A:-all of the above

B:-2 and 3

C:-1 and 4

D:-1 and 2

Correct Answer:- Option-D

Question29:-Statement 1 - Turbidimeter is used to measure sulfate content in water  
Statement 2 - In a Turbidimeter, Barium chloride is added to form barium sulphate crystals of uniform size

Which of the above is true regarding a turbidimeter?

A:-both are correct

B:-both are incorrect

C:-Statement 1 is correct, statement 2 is incorrect

D:-Statement 1 is incorrect but statement 2 is correct

Correct Answer:- Option-A

Question30:-Out of the following, what are the preferred values for a boiler feed water

1. PH above 11
2. Alkalinity between 300 and 500 ppm
3. Chlorides between 60 and 100 ppm
4. Total dissolved solids 10 ppm.

A:-1, 2 and 4

B:-1, 2 and 3

C:-2 and 3

D:-2 only

Correct Answer:- Option-B

Question31:-Which of the following statements related to boiler feed water alkalinity is true?

Statement 1 - Excess alkalinity causes caustic embrittlement

Statement 2 - Alkalinity needs to be high enough to prevent corrosion

A:-Both are correct

B:-Both are incorrect

C:-only 1 correct

D:-Only 2 correct

Correct Answer:- Option-A

Question32:-Statement 1 - Conductivity can be used to measure amount of total dissolved solids in feed water

Statement 2 - Purity of steam leaving the boiler can be measured by measuring conductivity of steam

Which of the above statements is correct?

A:-Statement 1 only

B:-Statement 2 only

C:-Statement 1 and 2

D:-Both are incorrect

Correct Answer:- Option-C

Question33:-Statement 1 - Phosphate treatment is to reduce Calcium of low hardness water.

Statement 2 - Continuous blowdown in a boiler differs from intermittent blowdown by keeping concentration levels constant

Which of the above is correct?

A:-only statement 1 is correct

B:-only statement 2 is correct

C:-both are correct

D:-both are incorrect

Correct Answer:- Option-C

Question34:-In a Steam boiler, losses are in the order of (low to high)

A:-Shell losses, Blowdown, Flue gases

B:-Shell losses, Flue gases, Blowdown

C:-Blowdown, Shell losses, Flue gases

D:-Flue gases, Blowdown, Shell losses

Correct Answer:- Option-A

Question35:-Statement 1 - Scaling is the result of deposition of Calcium and Magnesium into carbonates at higher temperatures

Statement 2 - Corrosion is mainly due to dissolved oxygen and partly by carbon dioxide formed by decomposition of carbonates at high temperature

Which of the above statements is correct?

A:-both are incorrect

B:-both are correct

C:-only statement 1

D:-only statement 2

Correct Answer:- Option-B

Question36:-Statement 1 - An automatic blowdown system works by sensing anything that adds conductivity like Calcium, Magnesium, Sodium etc.

Statement 2 - Ammonia is known to increase yellow metal corrosion.

Which of the above statement are true?

A:-Statement 1 only

B:-Statement 2 only

C:-both are incorrect

D:-both are correct

Correct Answer:- Option-D

Question37:-Statement 1 - Incomplete oxygen removal from feed water causes economiser failure due to pitting

Statement 2 - Deaerator and feedwater tank operates on the basis of increased solubility of dissolved gases at increased temperatures

Which of the above statements are true

A:-both are correct

B:-Both are correct

C:-Only statement 1

D:-Only Statement 2

Correct Answer:- Option-C

Question38:-Statement 1 - Lever safety valves can be adjusted for different operating pressures

Statement 2 - In a Lever safety valve, operating pressure is set by shifting the weight arm (position) on the lever.

Which of the above is correct regarding the operation of a boiler?

A:-Statement 1

B:-Statement 2

C:-Both are incorrect

D:-Both are correct

Correct Answer:- Option-D

Question39:-Statement 1 - High steam and low water level safety valve can be used as a pressure regulator as well as water level indicator

Statement 2 - High steam and low water level valve makes different sounds (whistles) for low water level and high pressure

Which of the above is correct regarding the operation of a boiler?

A:-Statement 1



B:-Statement 2

C:-both are incorrect

D:-both are correct

Correct Answer:- Option-D

Question40:-In the super heater section of a boiler which combination of following heating methods is used?

1. inductive
2. radiative
3. convective
4. conductive

A:-1 and 2

B:-2 and 3

C:-3 and 4

D:-1, 2, 3 and 4

Correct Answer:- Option-B

Question41:-Statement 1 - In a boiler, steam trap is used to reduce sediments and impurities

Statement 2 - In a boiler, blow off cock is used to reduce condensate accumulation. Which of the above is correct regarding the operation of a boiler?

A:-Statement 1

B:-Statement 2

C:-Both are incorrect

D:-Both are correct

Correct Answer:- Option-C

Question42:-Assertion - All high pressure boilers are water tube boilers

Reason - In water tube boiler are high pressure steam passes through small diameter tubes, 'Hoop stresses' developed is minimum

Which of the above is true regarding the working of a high pressures boiler?

A:-Assertions and reasons are true. Reason is correct explanation for Assertion

B:-Assertion is true but reason is false

C:-Assertion is false but reason is true

D:-Both are true but reason is not the correct explanation

Correct Answer:- Option-A

Question43:-Which of the following are true regarding the operation of a Benson boiler?

1. It is a fire tube boiler
2. It works close to the critical point of water
3. It is known as drumless boiler
4. It has severe maintenance issues

A:-2, 3 and 4

B:-1, 2 and 3

C:-1 only

D:-1, 2, 3 and 4

Correct Answer:- Option-A

Question44:-What is the preferred conductivity value for boiler feed water in *micro siemens per meter*?

A:-equal to 50.0

B:-less than 50.0 but greater than 25.0

C:-above 100.0

D:-less than 5.0

Correct Answer:- Option-D

Question45:-Which of the following is correct regarding the operation of a La Mont boiler

1. It can produce 170 bar steam at 50 tonne per hour rate
2. It is a supercritical boiler
3. It uses forced circulation of water

A:-2 only

B:-1 and 3

C:-1 only

D:-3 only

Correct Answer:- Option-B

Question46:-Which of the following is correct regarding the operation of a Boiler?

1. Fusible plug is generally used in fire tube boilers at protection devices
2. Fire tube boiler has higher efficiency than a water tube boiler for same steam conditions
3. Boiler accessories are used to improve efficiency of boilers

A:-1 and 3

B:-2 and 3

C:-2 only

D:-1 only

Correct Answer:- Option-A

Question47:-Which of the following is true regarding the working of boilers?

1. Cochran boiler is a vertical boiler
2. Babcox Wicox boiler is a water tube boiler
3. Stirling boiler can produce steam at much higher pressure than a Lancashire boiler

A:-1 and 2 only

B:-All of above

C:-None of above

D:-1 only

Correct Answer:- Option-B

Question48:-Which of the following is correct regarding a stirling boiler?

1. In a stirling boiler steam drums and water drums are connected by steel tubes.
2. In a stirling boiler equalizers are used to equalise pressure in steam drums

A:-1 only

B:-2 only

C:-both are correct

D:-both are incorrect

Correct Answer:- Option-B

Question49:-Which of the following is correct regarding a steam locomotive?

1. It has no stacks
2. It is a horizontal boiler
3. It is externally fired
4. It is a water tube boiler
5. It is a fire tube boiler with a single tube for flue gas
6. It is a fire tube with many tubes for flue gas

A:-1, 2, 3 and 4

B:-1, 2, 3 and 5

C:-1, 2, 3 and 6

D:-2, 3 and 6

Correct Answer:- Option-D

Question50:-Which of the following is not a boiler mounting?

A:-Feed check valve

B:-Blow off cock

C:-Pressure gauge

D:-Feed pump

Correct Answer:- Option-D

Question51:-The device which used to put-off the fire in the boiler furnace when the level of water falls to an unsafe limit

A:-Fusible plug

B:-Blow off cock

C:-Steam stop valve

D:-Feed check valve

Correct Answer:- Option-A

Question52:-Which of the type of safety valve is mainly used for marine and locomotive boilers?

A:-Dead weight safety valve

B:-Spring loaded safety valve

C:-Lever safety valve

D:-All of the above

Correct Answer:- Option-B

Question53:-A device, which is used to recover the waste heat of the flue gas for heating feed water

A:-Super heater

B:-Air pre heater

C:-Economiser

D:-Evaporator

Correct Answer:- Option-C

Question54:-The function of an injector in a steam boiler is to

A:-Inject fuel at the furnace

B:-Deliver cold water to boiler against its own pressure

C:-Inject chemical solution in the feed pump

D:-Create vacuum at the chimney

Correct Answer:- Option-B

Question55:-Pressure gauge in a boiler is used to indicate the pressure of

A:-Inlet air

B:-Exhaust hot air

C:-Feed water

D:-Steam

Correct Answer:- Option-D

Question56:-The shape of manhole door in a boiler is

A:-Circular

B:-Square

C:-Rectangular

D:-Elliptical

Correct Answer:- Option-D

Question57:-A feed check valve is a

A:-Two way valve

B:-Reversible valve

C:-Non-return valve

D:-None of the above

Correct Answer:- Option-C

Question58:-The mounting at the bottom of the boiler to discharge the accumulated mud, scale or sediments is

- A:-Fusible plug
- B:-Blow off cock
- C:-Manhole
- D:-Check valve

Correct Answer:- Option-B

Question59:-The auxiliary parts or plants required for steam boilers for their proper operation and to increased efficiency is called

- A:-Economisers
- B:-Boiler mountings
- C:-Boiler accessories
- D:-Super heaters

Correct Answer:- Option-C

Question60:-Fusible plug for boiler is made with

- A:-Lead
- B:-Silver
- C:-Tin
- D:-Gun metal

Correct Answer:- Option-D

Question61:-The number of water level indicators generally fitted on a boiler is

- A:-One
- B:-Two
- C:-Three
- D:-Four

Correct Answer:- Option-B

Question62:-The function of superheater is to

- A:-Increase the temperature of saturated steam
- B:-Decrease the temperature of saturated steam
- C:-Increase the steam pressure
- D:-Decrease the steam pressure

Correct Answer:- Option-A

Question63:-Boiler draught is broadly classified into

- A:-Induced draught and forced draught
- B:-Mechanical draught and chimney draught
- C:-Natural draught and artificial draught
- D:-Mechanical draught and steam jet draught

Correct Answer:- Option-C

Question64:-Choose the wrong statement about natural draught

A:-Higher efficiency than artificial draught

B:-Maintenance cost is nil as there is no mechanical part

C:-Natural draught is considerably affected by the atmospheric temperature

D:-It does not require any external power for producing the draught

Correct Answer:- Option-A

Question65:-In natural draught , the efficiency of chimney is approximately

A:-More than 70%

B:-Between 30% - 70%

C:-Between 10% - 30%

D:-0.25%

Correct Answer:- Option-D

Question66:-Draught produced by a blower is installed near the base of the chimney is

A:-Balanced draught

B:-Forced draught

C:-Induced draught

D:-Chimney draught

Correct Answer:- Option-C

Question67:-The draught produced by steel chimney as compared to that produced by brick chimney for the same height is

A:-Less

B:-More

C:-Same

D:-It can be more or less

Correct Answer:- Option-B

Question68:-The type of draught produced for locomotives by

A:-Forced

B:-Steam jet

C:-Balanced

D:-Induced

Correct Answer:- Option-B

Question69:-Which is the correct statement about induced draught

A:-The pressure inside the furnace is below the atmospheric pressure

B:-The pressure inside the furnace is above the atmospheric pressure

C:-The fan is placed before fire grate and forces fresh air into the combustion chamber

D:-None of the above

Correct Answer:- Option-A

Question70:-The draught produced by means of a chimney is called

A:-Forced draught

B:-Balanced draught

C:-Natural draught

D:-Induced draught

Correct Answer:- Option-C

Question71:-The power (P) required in Watts to drive the induced draught is which produces draught equal to

Where,

m=mass of air actually used kg/kg of fuel

M=Mass of fuel in Kg/min

T=Absolute temperature of outside air

$\eta$ =efficiency of fan

A:-  $\frac{hmMt}{60 \times 36 \times \eta}$

B:-  $\frac{\eta Mt}{60 \times 36 \times hm}$

C:-  $\frac{60 \times 36 \times \eta}{hmMT}$

D:-  $\frac{60 \times 36 \times hm}{\eta MT}$

Correct Answer:- Option-A

Question72:-Artificial draught is produced by

A:-Blower

B:-Steam jet

C:-Chimney

D:-Blower and steam jet

Correct Answer:- Option-D

Question73:-The amount of water evaporated from saturated liquid water at 100°C to dry saturated steam at 100°C is called

A:-Evaporative capacity

B:-Effectiveness of boiler

C:-Equivalent evaporation

D:-Boiler efficiency

Correct Answer:- Option-C

Question74:-The efficiency of a boiler is defined as

A:-The ratio of heat supplied by fuel in a given time to the heat absorbed by feed water

B:-The ration of heat actually utilised in generation of steam to the heat supplied by the fuel in the same time

C:-Mass of water evaportated to the total water supplied in the boiler

D:-None of the above

Correct Answer:- Option-B

Question75:-The main object of a boiler trial is

A:-To determine the generating capacity of the boiler

B:-To determine the thermal efficiency of the boiler when working at a definite pressure

C:-To prepare heat balance sheet for the boiler

D:-All of the above

Correct Answer:- Option-D

Question76:-If 'h' is the total heat of the steam in kJ/kg and 'hf' is the sensible heat of feed water kJ/kg, the factor of evaporation is that

A:- $\frac{h+h_f}{2257}$

B:- $\frac{h-h_f}{2257}$

C:- $\frac{h \times h_f}{2257}$

D:- $\frac{h \times h_f}{(h-h_f)2257}$

Correct Answer:- Option-B

Question77:-In a well maintained boiler, heat loss is maximum

A:-Due to moisture present in the fuel

B:-Due to unburnt carbon in ash pit

C:-By radiation

D:-Flue gases exhausted through chimney

Correct Answer:- Option-D

Question78:-A \_\_\_\_\_ shows the complete account of heat supplied by 1 kg of dry fuel and heat consumed

A:-Heat utilisation sheet

B:-Fuel consumption sheet

C:-Heat balance sheet

D:-None of the above

Correct Answer:- Option-C

Question79:-Which of the following loss cannot be found direct method and is calculated by subtracting the heat utilised in rising steam and heat loss from the heat supplied?

A:-Heat lost due to unburnt carbon in ash pit

B:-Heat loss due to radiation

C:-Heat loss due to moisture present in air

D:-None of the above

Correct Answer:- Option-B



Question80:-The performance of a steam boiler is measured in terms of its

A:-Efficiency

B:-Heat balance sheet

C:-Evaporative capacity

D:-None of the above

Correct Answer:- Option-C

Question81:-Coke is produced by

A:-heating wood with a limited supply of air to a temperature below 280°C

B:-bituminous coal is heated strongly in the absence of air for 48 hours

C:-when coal is first dried and then crushed to a fine powder by pulverising machine

D:-from finely ground coal by moulding under pressure with or without a binding material

Correct Answer:- Option-B

Question82:-Which of the following has the highest calorific value?

A:-Peat

B:-Lignite

C:-Bituminous coal

D:-Anthracite coal

Correct Answer:- Option-D

Question83:-Which of the following varieties of coal is mostly used in steam boilers?

A:-Pulverised coal

B:-Non-caking Bituminous coal

C:-Brown coal

D:-Caking Bituminous coal

Correct Answer:- Option-B

Question84:-A good fuel is one which has

A:-low ignition point and low calorific value

B:-high ignition point and low calorific value

C:-low ignition point and high calorific value

D:-high ignition point and high calorific value

Correct Answer:- Option-C

Question85:-Calorific value of gaseous fuel is expressed in

A:-kJ

B:-kJ/kg

C:-kJ/m<sup>2</sup>

D:-kJ/ $m^3$

Correct Answer:- Option-D

Question86:-Producer gas is obtained by

A:-partial combustion of coal, coke and charcoal in a mixed air stream

B:-combustion of bituminous coal

C:-passing steam over incandescent coke

D:-passing air and large amount of steam over waste coal at about 650°C

Correct Answer:- Option-A

Question87:-Calorific value of liquid fuel is the amount of heat liberated

A:-by complete combustion of 1  $m^3$  of fuel

B:-When temperature of the fuel is raised by 1°C

C:-By complete combustion of 1 kg of fuel

D:-None of the above

Correct Answer:- Option-C

Question88:-Bomb calorimeter is used to determine

A:-higher calorific value of solid and liquid fuels at high pressure

B:-lower calorific value of gaseous fuel at high pressure

C:-higher calorific value of solid and liquid fuels at constant pressure

D:-lower calorific value of gaseous fuel at constant pressure

Correct Answer:- Option-A

Question89:-To calculate net calorific value, product of combustion are

A:-cooled at room temperature

B:-allowed to escape

C:-collected

D:-heated

Correct Answer:- Option-B

Question90:-Which of the following gas has highest calorific value

A:-producer gas

B:-coal gas

C:-mond gas

D:-blast furnace gas

Correct Answer:- Option-B

Question91:-One kg of carbon requires  $\frac{4}{3}$  kg of oxygen and produces

A:- $\frac{8}{3}$  kg of carbon monoxide gas

B:- $\frac{11}{3}$  kg of carbon monoxide gas

C:- $\frac{11}{7}$  kg of carbon monoxide gas

D:- $\frac{7}{3}$  kg of carbon monoxide gas

Correct Answer:- Option-D

Question92:-Mass of dry flue gas per kg of fuel burnt is the ratio of

A:-Mass of oxygen in 1 kg of flue gas to the mass of oxygen in 1 kg of fuel

B:-Mass of oxygen in 1 kg of fuel to the mass of oxygen in 1 kg of flue gas

C:-Mass of carbon in 1 kg of flue gas to the mass of carbon in 1 kg of fuel

D:-Mass of carbon in 1 kg of fuel to the mass of carbon in 1 kg of flue gas

Correct Answer:- Option-D

Question93:-Mass of excess air supplied is equal to

A:- $\frac{100}{23} \times$  Mass of excess oxygen

B:- $\frac{23}{100} \times$  Mass of excess carbon

C:- $\frac{23}{100} \times$  Mass of excess oxygen

D:- $\frac{100}{23} \times$  Mass of excess carbon

Correct Answer:- Option-A

Question94:-Orsat apparatus is used for

A:-Gravimetric analysis of dry flue gas

B:-Volumetric analysis of dry flue gas

C:-Mass flow of dry flue gas

D:-Measuring smoke density of flue gas

Correct Answer:- Option-B

Question95:-The three "Ts" for good combustion are

A:-Temperature, time and turbulence

B:-Total air, true fuel and turbulence

C:-Thorough mixing, total air and temperature

D:-Total air, time and temperature

Correct Answer:- Option-A

Question96:-Kelvin-Planck's law deals with

A:-Conservation of work

B:-Conservation of heat

C:-Conversion of heat into work

D:-Conversion of work into heat

Correct Answer:- Option-C

Question97:-Heat transfer takes place according to which of the following law?

A:-Zeroth law of thermodynamics

B:-First law of thermodynamics

C:-Newton's law of cooling

D:-Second law of thermodynamics

Correct Answer:- Option-D

Question98:-The mass of carbon present in 1 kg of flue gas is given by

A:  $-\frac{11}{3}CO_2 + \frac{3}{7}CO$

B:  $-\frac{7}{3}CO_2 + \frac{3}{11}CO$

C:  $-\frac{3}{7}CO_2 + \frac{11}{3}CO$

D:  $-\frac{3}{11}CO_2 + \frac{3}{7}CO$

Correct Answer:- Option-D

Question99:-When one kg of solid or liquid fuel, containing  $C, H_2, O_2, S$

A:  $-\frac{23}{100} \left[ \left( \frac{8}{3}C + 8H_2 + S \right) - O_2 \right] kg$

B:  $-\frac{100}{23} \left[ \left( \frac{8}{3}C + 8H_2 + S \right) - O_2 \right] kg$

C:  $-\frac{100}{23} \left[ \frac{8}{3}C + 8H_2 + S + O_2 \right] kg$

D:  $-\frac{100}{23} \left[ \left( \frac{8}{3}C + 8H_2 + O_2 - S \right) \right] kg$

Correct Answer:- Option-B

Question100:-Air contains by volume

A:-23 parts  $O_2$  and 77 parts  $N_2$

B:-21 parts  $O_2$  and 79 Parts  $N_2$

C:-77 parts  $O_2$  and 23 Parts  $N_2$

D:-79 parts  $O_2$  and 21 Parts  $N_2$

Correct Answer:- Option-B