Shivaji University, Kolhapur
Question Bank For Final Year Students Examination 2019-20
Branch : Mechanical Engineering

Basic Information of College and Faculty

1	**Name of College:**	**Tatyasaheb Kore Institute of Engineering and Technology, Warananagar**
2	**Class**	Backlog T. E. Mechanical Engineering (revised)
3	**Name of Subject:**	**Heat and Mass Transfer**
4	**Subject Code**	66243
5	**Name of Faculty/ Teacher:**	Prof. Kamble G. S. / Prof. M.S. Sawant/ Prof. P. V. Kamble
6	**Designation:**	
7	**Experience (in Years)**	
8	**Status:**	
9	**Cell No.:**	
10	**Mail Id:**	

Question 1	Unit of thermal conductivity in S.I. units is
A	J/m^2 sec
B	J/m °K sec
C	W/m °K
D	(b) and (c) above.
Marks	2
Unit No.	1

Question 2	Thermal conductivity of solid metals with rise in temperature normally
A	Increases
B	Decreases
C	Remains constant
D	May increase or decrease depending on temperature
Marks	2
Unit No.	1

Question 3	Heat transfer takes place as per
A	Zeroth law of thermodynamics
B	First law of thermodynamic
C	Second law of the thermodynamics
D	Stefan's law
Marks	2
Unit No.	1

Question 4	Heat transfer in liquid and gases takes place by
A	Conduction
B	Convection
C	Radiation
D	Conduction and convection
Marks	2
Unit No.	1

Question 5	Which of the following is the case of heat transfer by radiation
A	Blast furnace
B	Heating of building
C	Cooling of parts in furnace
D	Heat received by a person from fireplace
Marks	2
Unit No.	1

Question 6	Which of the following is a case of steady state heat transfer
A	I.C. engine
B	Air preheaters
C	Heating of building in winter
D	None of the above.
Marks	2
Unit No.	1

Question 7	The concept of overall coefficient of heat transfer is used in heat transfer problems of
A	Conduction
B	Convection
C	Radiation
D	Conduction and convection.
Marks	2
Unit No.	1

Question 8	A wall of thickness 0.6 m has width has a normal area 1.5 m^2 and is made up of material of thermal conductivity 0.4 W/mK. The temperatures on the two sides are 8000 C. What is the thermal resistance of the wall?
A	1 W/K
B	1.8 W/K
C	1 K/W
D	1.8 K/W
Marks	2
Unit No.	1

Question 9	A flat plate has thickness 5 cm, thermal conductivity 1W/(mk), convective heat transfer coefficients on its two flat faces of 10 W/(m^2k) and 20W/(m^2k). The overall heat transfer co-efficient for such a flat plate is.
A	5 W/(m^2k)
B	10 W/(m^2k)
C	7 .5 W/(m^2k)
D	20 W/(m^2k)
Marks	2
Unit No.	1

Question 10	Which of the following has least value of conductivity
A	Glass
B	Water
C	plastic
D	Air
Marks	2
Unit No.	1

Question 11	Thermal conductivity of a material may be defined as the
A	Quantity of heat flowing in one second through one cm cube of material when opposite faces are maintained at a temperature difference of 1°C
B	Quantity of heat flowing in one second through a slab of the material of area one cm square, thickness 1 cm when its faces differ in temperature by 1°C
C	Heat conducted in unit time across unit area through unit thickness when a temperature difference of unity is maintained between opposite faces
D	All of the above
Marks	2
Unit No.	1

Question 12	Thermal diffusivity is
A	A dimensionless parameter
B	Function of temperature
C	Used as mathematical model
D	A physical property of the material
Marks	2
Unit No.	1

Question 13	Two plates spaced 150 mm apart are maintained at 1000°C and 70°C. The heat transfer will take place mainly by
A	Convection
B	Free convection
C	Forced convection
D	Radiation
Marks	2
Unit No.	1

Question 14	A copper block and an air mass block having similar dimensions are subjected to symmetrical heat transfer from one face of each block. The other face of the block will be reaching to the same temperature at a rate
A	Faster in air block
B	Faster in copper block
C	Equal in air as well as copper block
D	Cannot be predicted with the given information
Marks	2
Unit No.	1

Question 15	A composite wall having three layers of thickness 0.3 m, 0.2 m and 0.1 m and of thermal conductivities 0.6, 0.4 and 0.1 W/mK, respectively, is having surface area 1 m^2. If the inner and outer temperatures of the composite wall are 1840 K and 340 K, respectively, what is the rate of heat transfer?
A	150 W
B	1500 W
C	75 W
D	750 W
Marks	2
Unit No.	1

Question 16	A stainless steel tub (ks =19 W/mK) of 2 cm ID and 5 cm OD is insulated with 3 cm thick asbestos (ka=0.2 W/mK). If the temperature difference between the innermost and outermost surfaces is 600^{o}C, the heat transfer rate per unit length is
A	0.94 W/m
B	9.44 W/m
C	944.72 W/m
D	9447.21 W/m
Marks	2
Unit No.	1

Question 17	Upto the critical radius of insulation
A	Added insulation increases heat loss
B	Added insulation decreases heat loss
C	Convection heat loss is less than conduction heat loss
D	Heat flux decreases
Marks	2
Unit No.	1

Question 18	A metal rod of 2 cm diameter has a conductivity of 40W/mK, which is to be insulated with an insulating material of conductivity of 0.1 W/m K. If the convective heat transfer coefficient with the ambient atmosphere is 5 W/m^2K, the critical thickness of insulation will be
A	1cm
B	2 cm
C	7 cm
D	8 cm
Marks	2
Unit No.	1

Question 19	Heat is conducted through a 10 cm thick wall at the rate of 30 W/m^2 when the temperature difference across the wall is 10oC. What is the thermal conductivity of the wall?
A	0.03 W/mK
B	0.3 W/mK
C	3.0 W/mK
D	30.0 W/mK
Marks	2
Unit No.	1

Question 20	What is the critical radius of insulation for a sphere equal to? k = thermal conductivity in W/m-K , h = heat transfer coefficient in W/m^2K
A	2kh
B	2k/h
C	k/h
D	$\sqrt{2}$kh
Marks	2
Unit No.	1

Question 21	In order to substantially reduce leakage of heat from atmosphere into cold refrigerant flowing in small diameter copper tubes in a refrigerant system, the radial thickness of insulation, cylindrically wrapped around the tubes, must be
A	Higher than critical radius of insulation
B	Slightly lower than critical radius of insulation
C	Equal to the critical radius of insulation
D	Considerably higher than critical radius of insulation
Marks	2
Unit No.	1

Question 22	On heat transfer surface, fins are provided
A	To increase temperature gradient so as to enhance heat transfer
B	To increase turbulence in flow for enhancing heat transfer
C	To increase surface are to promote the rate of heat transfer
D	To decrease the pressure drop of the fluid
Marks	2
Unit No.	1

Question 23	Which one of the following is correct? The effectiveness of a fin will be maximum in an environment with
A	Free convection
B	Forced convection
C	Radiation
D	Convection and radiation
Marks	2
Unit No.	3

Question 24	Fins are made as thin as possible to
A	Reduce the total weight
B	Accommodate more number of fins
C	Increase the width for the same profile area
D	Improve flow of coolant around the fin
Marks	2
Unit No.	3

Question 25	The value of Biot number is very small (less than 0.01) when
A	The convective resistance of the fluid is negligible
B	The conductive resistance of the fluid is negligible
C	The conductive resistance of the solid is negligible
D	None of these
Marks	2
Unit No.	2

Question 26	A spherical thermocouple junction of diameter 0.706 mm is to be used for the measurement of temperature of a gas stream. The convective heat transfer co-efficient on the bead surface is 400 W/m2K. Thermophysical properties of thermocouple material are k = 20 W/mK, C =400 J/kg, K and ρ = 8500 kg/m^3. If the thermocouple initially at 30°C is placed in a hot stream of 300°C, then time taken by the bead to reach 298°C, is
A	2.35 s
B	4.9 s
C	14.7 s
D	29.4 s
Marks	2
Unit No.	2

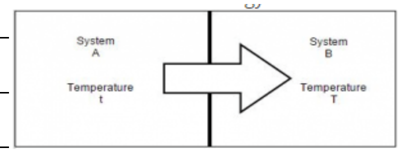
Question 27	Which one of the following statements is correct? The curve for unsteady state cooling or heating of bodies
A	Parabolic curve asymptotic to time axis
B	Exponential curve asymptotic to time axis
C	Exponential curve asymptotic both to time and temperature axis
D	Hyperbolic curve asymptotic both to time and temperature axis
Marks	2
Unit No.	2

Question 28	A solid copper ball of mass 500 grams, when quenched in a water bath at 30°C, cools from 530°C to 430°C in 10 seconds. What will be the temperature of the ball after the next 10 seconds?
A	300°C
B	320°C
C	350°C
D	Not determinable for want of sufficient data
Marks	2
Unit No.	2

Question 29	A thermocouple in a thermo-well measures the temperature of hot gas flowing through the pipe. For the most accurate measurement of temperature, the thermo-well should be made of:
A	Steel
B	Brass
C	Copper
D	Aluminum
Marks	2
Unit No.	2

Question 30	Lumped heat transfer analysis of a solid object suddenly exposed to a fluid medium at a different temperature is valid when
A	Biot number < 0.1
B	Biot number> 0.1
C	Fourier number < 0.1
D	Fourier number> 0.1
Marks	2
Unit No.	2

Question 31	The rate equation used to describe the mechanism of convection is called Newton's law of cooling. So rate of heat flow by convection doesn't depend on
A	Convective heat transfer coefficient
B	Surface area through which heat flows
C	Time
D	Temperature potential difference
Marks	2
Unit No.	4

Question 32	Consider system A at uniform temperature t and system B at another uniform temperature T (t > T). Let the two systems be brought into contact and be thermally insulated from their surroundings but not from each other. Energy will flow from system A to system B because of 
A	Temperature difference
B	Energy difference
C	Mass difference
D	Volumetric difference
Marks	2
Unit No.	4

Question 33	The ratio of inertia force to viscous force is known as
A	Grashoff's number
B	Reynolds number
C	Fourier number
D	Nusselt's number
Marks	2
Unit No.	4

Question 34	Air enters a rectangular duct measuring 30 cm by 40 cm with a velocity of 8.5 m/s and a temperature of 40 degree Celsius. The flowing air has a thermal conductivity 0.028 W/m K, kinematic viscosity 16.95 * 10^{-6} m^2/s and from empirical correlations the Nusselt's number has been approximated to be 425. Find the convective heat flow coefficient
A	24.71 W/m^2 K
B	34.71 W/m^2 K
C	44.71 W/m^2 K
D	54.71 W/m^2 K
Marks	2
Unit No.	4

Question 35	Which of the following heat flow situations pertains to free or natural convection?
A	Air conditioning installations and nuclear reactors
B	Flow of water inside the condenser tubes
C	Cooling of internal combustion engine
D	Cooling of metal rod in atmosphere
Marks	2
Unit No.	4

Question 36	A body cooling from 80 degree Celsius to 70 degree Celsius takes 10 minutes when left exposed to environmental conditions. If the body is to cool further from 70 degree Celsius to 60 degree Celsius under the same external conditions, According to Newton's law of Cooling, it will take
A	Same time of 10 minutes
B	More than 10 minutes
C	Less than 10 minutes
D	Time will depend upon the environmental conditions
Marks	2
Unit No.	4

Question 37	Identify the correct statement
A	Peclet number = (Graetz number) (Fourier number)
B	Peclet number = (Stanton number) (Fourier number)
C	Peclet number = (Reynolds number) (Prandtl number)
D	eclet number = (Graetz number) (Reynolds number)
Marks	2
Unit No.	4

Question 38	The product of buoyant force and inertia force to the square of the viscous force is known as
A	Stanton number
B	Grashoff's number
C	Fourier number
D	Peclet number
Marks	2
Unit No.	4

Question 39	The Dittus-Boelter equation for the fluid being heated is given by
A	$Nu = 0.023\ Re^{0.8}\ Pr^{0.4}$
B	$Nu = 0.23\ Re^{0.5}\ Pr^{0.5}$
C	$Nu = 0.3\ Re^{0.8}\ Pr^{0.5}$
D	$Nu = 0.5 Re^{0.5}\ Pr^{0.5}$
Marks	2
Unit No.	4

Question 40	The thickness of thermal boundary layer is arbitrarily defined as the distance from the plate surface at which
A	$t_S - t / t_S - t_{INFINITY} = 0.34$
B	$t_S - t / t_S - t_{INFINITY} = 0.10$
C	$t_S - t / t_S - t_{INFINITY} = 0.99$
D	$t_S - t / t_S - t_{INFINITY} = 0.70$
Marks	2
Unit No.	4

Question 41	The relationship between the thermal and hydrodynamic boundary layer thickness is governed by the
A	Peclet number
B	Prandtl number
C	Stanton number
D	Fourier number
Marks	2
Unit No.	4

Question 42	Cold air at 5 ^{o}C is carried by rectangular duct 30 x 20 cm in size and it is maintained at 15 ^{o}C over the whole surface. The velocity of air is 10 m/s. Taking the following properties of air at mean temp of 10 ^{o}C, find Nusselt's Number . Density 1.25 kg/m^3, Pr = 0.7115, k= 0.025 w/mk and Dynamic Viscosity 17.7 x 10^{-6} Ns/m^{2,} Use Dittus Boelter equation
A	306.05
B	1306.05
C	550
D	800.15
Marks	2
Unit No.	4

Question 43	In forced convection, air at 30 ^{o}C and 1 bar flows over the flat plate 75 cm long at velocity of 25 m/s. Determine the Reynolds number if properties of air at mean temperature are as below density= 1.19 kg/m^3, dynamic viscosity =2 x 10^{-5} kg/ms
A	150000
B	9650
C	100000
D	1115625
Marks	2
Unit No.	4

Question 44	For a duct of rectangular cross-section with length l and breadth b, the value of Hydraulic Diameter (d_e) is
A	l b / (l + b)
B	2 l b
C	2 l b / (l + b)
D	4 l b /(l + b)
Marks	2
Unit No.	4

Question 45	In natural convection, which dimensionless number measure the transition of flow from laminar to turbulent flow
A	Grashoff number
B	Reynolds number
C	Nusselt's number
D	Prandtl number
Marks	2
Unit No.	4

Question 46	Assumptions made for calculation of logarithmic mean temperature difference are (i) Constant overall heat transfer coefficient (ii) The kinetic and potential energy changes are negligible (iii) There is no conduction of heat along the tubes of heat exchanger Identify the correct statements
A	i, ii and iii
B	i and iii
C	i and ii
D	ii and iii
Marks	2
Unit No.	6

Question 47	Capacity ratio is defined as the product of
A	Mass and temperature
B	Mass and specific heat
C	Specific heat and temperature
D	Time and temperature
Marks	2
Unit No.	6

Question 48	The engine oil at 150 degree Celsius is cooled to 80 degree Celsius in a parallel flow heat exchanger by water entering at 25 degree Celsius and leaving at 60 degree Celsius. Estimate the exchanger effectiveness if heat capacity of engine oil in minimum
A	0.56
B	0.75
C	0.8
D	0.95
Marks	2
Unit No.	6

Question 49	A cross flow type air heater has an area of 50 m^2. The overall heat transfer coefficient is 100 W/m^2 K and heat capacity of both hot and cold stream is 1000 W/m K. The value of NTU is
A	1000
B	500
C	5
D	10
Marks	2
Unit No.	6

Question 50	In a balanced counter flow heat exchanger with m h c h = m c c c, the NTU is equal to unity. What is the effectiveness of heat exchanger?
A	0.5
B	1
C	1.5
D	0.25
Marks	2
Unit No.	6

Question 51	Effectiveness – NTU method is particularly useful in thermal design of heat exchangers when
A	Inlet temperature of the fluid streams are not known as a priori
B	The outlet temperatures of the hot fluid streams is known but that of cold fluid stream is not known as a priori
C	The outlet temperatures of the fluid streams is known as a priori
D	The outlet temperatures of the fluid streams are not known as a priori
Marks	2
Unit No.	6

Question 52	For the same heat transfer Q and same overall heat transfer coefficient Uo, surface area required for parallel flow operation is always
A	less than LMTD for counter flow
B	more than LMTD for counter flow
C	same as LMTD for counter flow
D	unpredictable
Marks	2
Unit No.	6

Question 53	Which of the following temperature difference is safer than other to consider in designing of heat exchangers?
A	Arithmetic Mean Temperature Difference (ΔTam)
B	Logarithmic Mean Temperature Difference (LMTD)
C	Both have nothing to do with safety
D	Other
Marks	2
Unit No.	6

Question 54	Heat flux increases with temperature excess beyond the Leiden-frost point due to
A	Radiation effect becomes predominant
B	Occurrence of subcooled boiling
C	Vapor space become large
D	Promotion of nucleate boiling
Marks	2
Unit No.	6

Question 55	In pool boiling, with increase in excess temperature, the heat flux in boiling
A	Increases continuously
B	Decreases and then increases
C	Decreases, then increases and again decreases
D	Increases, then decreases and again increases
Marks	2
Unit No.	6

Question 56	In regenerator type heat exchanger, heat transfer takes place by
A	Direct mixing of hot and cold fluids
B	A complete separation between hot and cold fluids
C	Flow of hot and cold fluids alternately over a surface
D	Generation of heat again and again
Marks	2
Unit No.	6

Question 57	On one side of a heat exchanger, air enters at 72.82ºC and leaves at 90ºC. On the other side of the heat exchanger is condensing steam at one atmosphere. The value for LMTD is
A	10 K
B	17.18 K
C	27ºC
D	100ºC
Marks	2
Unit No.	6

Question 58	How is the logarithmic mean temperature difference (LMTD) calculated for heat exchangers?
A	$\ln (\Delta T_i - \Delta T_e)$
B	$\ln (\Delta T_e - \Delta T_i)$
C	$(\Delta T_i - \Delta T_e) / (\ln (\Delta T_e / \Delta t_i))$
D	$(\Delta T_i - \Delta T_e) / (\ln (\Delta T_i / \Delta t_e))$
Marks	2
Unit No.	6

Question 59	What is the purpose of using baffles in shell-and-tube heat exchangers?
A	to maintain uniform spacing between tubes
B	to enhance heat transfer
C	both a. and b.
D	none of the above
Marks	2
Unit No.	6

Question 60	The scales form in heat exchangers after a period of operation and provide additional resistance to heat transfer with some heat transfer coefficient. The reciprocal of this scale heat transfer coefficient is called as
A	scaling factor
B	fouling factor
C	forming factor
D	resisting factor
Marks	2
Unit No.	6

Question 61	An iron rod of length L = 30 cm, diameter D = 1 cm and k = 63 W/mK is attached horizontally to a large tank at temp To = 200°C. The rod is dissipating heat by convection into the ambient air at 20°C with a heat transfer coefficient 15 W/m2K. The temperature of rod 10 cm and 20 cm from the tank is
A	100 & 134
B	134 & 100
C	30 & 120
D	120 & 30
Marks	2
Unit No.	3

Question 62	On the finned surface, let us take an infinitesimally small element "dx" thickness at distance 'x' from the base of the fin, the energy balance equation at the element
A	heat convected into the element = heat convected out + heat conducted out from element
B	heat conducted into the element = heat convected out + heat conducted out from element
C	heat conducted into element = heat convected out from element
D	None
Marks	2
Unit No.	3

Question 63	Consider the following statements pertaining to large heal transfer rate using fins;1. fins should be used on the side where heat transfer coefficient is small 2. long and thick fins should be used 3. short thin fins should be used 4. thermal conductivity of fin material should be large Which of the above statements are correct?
A	1, 2 & 3
B	3 & 4
C	1, 2
D	1, 3 & 4
Marks	2
Unit No.	3

Question 64	Heat transfer through extended surfaces occurs by?
A	Conduction
B	Convection
C	Conduction & convection
D	None of the above
Marks	2
Unit No.	3

Question 65	The Governing differential equation or Differential equation of the pin fin for a temperature distribution on fins is given by?
A	$\frac{\partial^2\theta}{\partial x^2} + m^2\theta = 0$
B	$\frac{d^2\theta}{dx^2} + m^2\theta = 0$
C	$\frac{d^2\theta}{dx^2} - m^2\theta = 0$
D	$\frac{\partial^2\theta}{\partial x^2} - m^2\theta = 0$
Marks	2
Unit No.	3

Question 66	Temperature variation along the length of very long fin is
A	Exponential
B	Hyperbolic
C	Linear
D	Logarithmic
Marks	2
Unit No.	3

Question 67	The temperature drop across the given length of a long fin is minimum when the fin material
A	Silver (Ag)
B	Cast Iron
C	Stainless steel (S.S.)
D	Copper (Cu)
Marks	2
Unit No.	3

Question 68	The temperature distribution in a very long fin is given by
A	$\frac{\theta}{\theta_s} = e^{m/x}$
B	$\frac{\theta}{\theta_s} = e^{mx}$
C	$\frac{\theta}{\theta_s} = e^{-mx}$
D	$\frac{\theta}{\theta_s} = e^{-m/x}$
Marks	2
Unit No.	3

Question 69	The efficiency of long fin is represented by
A	m/L
B	L/m
C	mL
D	1/(mL)
Marks	2
Unit No.	3

Question 70	Efficiency of fin represents
A	The space requirement
B	Economic aspects
C	Thermal performance
D	All of the above
Marks	2
Unit No.	3

Question 71	As 'k' of fin is increased
A	Efficiency increased; effectiveness increased
B	Efficiency decreased; effectiveness increased
C	Efficiency decreased; effectiveness decreased
D	Efficiency increased; effectiveness decreased
Marks	2
Unit No.	3

Question 72	. As 'h' of the medium is increased
A	Efficiency increased; effectiveness increased
B	Efficiency increased; effectiveness decreased
C	Efficiency decreased; effectiveness decreased
D	Efficiency decreased; effectiveness increased
Marks	2
Unit No.	3

Question 73	Fins are more effective when the medium is
A	air
B	diesel
C	water
D	boiling water
Marks	2
Unit No.	3

Question 74	The general equation for temperature distribution in a fin is given by
A	$\theta = C_1 e^{m/x} - C_2 e^{-m/x}$
B	$\theta = C_1 e^{mx} + C_2 e^{-mx}$
C	$\theta = C_1 e^{m/x} + C_2 e^{-m/x}$
D	$\theta = C_1 e^{mx} - C_2 e^{-mx}$
Marks	2
Unit No.	3

Question 75	The mathematical definition m is
A	$m = \sqrt{\frac{hP}{kA}}$
B	$m = \sqrt{\frac{kA}{hP}}$
C	$m = \sqrt{\frac{hA}{kP}}$
D	$m = \sqrt{\frac{hk}{PA}}$
Marks	2
Unit No.	3

Question 76	The heat transfer rate (q) in a long fin is given by:
A	$hPkA \sqrt{\theta_s}$
B	$\sqrt{hPkA}\ \theta_s$
C	$\sqrt{\frac{hP}{kA}}\theta_s$
D	$\sqrt{hPkA.\ \theta_s}$
Marks	2
Unit No.	3

Question 77	A fin made of cast iron (k = 54.5 W/mK) is kept in air at 20°C with h = 13.2 W/m2K. The fin length is 9.5 cm perimeter is 32 cm and area is 20.8 cm2. The efficiency of the fin with end insulated is:
A	90.11%
B	57.99%
C	49.44%
D	94.60%
Marks	2
Unit No.	3

Question 78	Provision of fins on a given heat transfer surface will be more it there are
A	Fewer number of thick fins
B	Fewer number of thin fins
C	Large number of thin fins
D	Large number of thick fins
Marks	2
Unit No.	3

Question 79	Addition of fin to the surface increases the heat transfer if $\sqrt{hA/kP}$ is
A	Equal to one
B	greater than one
C	less than one
D	greater than one but less than two
Marks	2
Unit No.	3

Question 80	To determine the thermal conductivity of a long solid 20 mm diameter rod one end was inserted into a furnace while the other end was projecting into air at 25°C. After steady state, has been reached. The temperatures at two points 100 mm apart were measured and found to be 125°C and 91°C respectively. The heat transfer coefficient over the surface of the rod was estimated to be 17.45 W/m^2K. The thermal conductivity of the rod is
A	122
B	154
C	187
D	203
Marks	2
Unit No.	3

Question 81	Radiation is believed to be
A	a bulk phenomenon
B	a wave phenomenon
C	a molecular phenomenon
D	All the above
Marks	2
Unit No.	5

Question 82	With an increase in wavelength the monochromatic emissive power of a black body
A	decreases
B	increase
C	decreases, becomes minimum and then increase
D	increase, becomes maximum and then decreases
Marks	2
Unit No.	5

Question 83	Monochromatic emissive power of a black body is a function of
A	only λ
B	both λ and T
C	only T
D	None of the above
Marks	2
Unit No.	5

Question 84	For a transparent body
A	tau =1
B	rho= 1
C	tau =0
D	alpha=1
Marks	2
Unit No.	5

Question 85	For an opaque body
A	tau =1
B	rho= 0
C	tau =0
D	rho =1
Marks	2
Unit No.	5

Question 86	Wien's displacement law is applicable only to
A	gray surfaces
B	real surfaces
C	black surfaces
D	All of the above
Marks	2
Unit No.	5

Question 87	Plank's distribution law is applicable only to
A	gray surfaces
B	real surfaces
C	black surfaces
D	All of the above
Marks	2
Unit No.	5

Question 88	Wien's displacement law is represented by
A	$\lambda max\ T = 2898\ \mu K$
B	$\lambda max\ T = 3898\ \mu K$
C	$\lambda max\ T = 1898\ \mu K$
D	$\lambda max\ T = 4898\ \mu K$
Marks	2
Unit No.	5

Question 89	A real surface is found to emit maximum radiation at a wavelength of 2.5 μ. Its surface temperature is
A	1159.2°C
B	886.2°C
C	115.92°C
D	1559.2°C
Marks	2
Unit No.	5

Question 90	The reciprocity theorem is expressed as
A	$A_1 F_{21} = A_2 F_{12}$
B	$A_1 F_{12} = A_2 F_{21}$
C	$F_{12} = F_{21}$
D	$\frac{A_1}{F_{12}} = \frac{A_2}{F_{21}}$
Marks	2
Unit No.	5