Que	Question Paper with Final (Revised) Answer Key for the Post of Lecturer (Mechanical Engineering) held on 05-07-2021		
1	mcode : LH1001		
Q1	Q1: Newton's first law of motion gives the concept of		
A	Force		
В	Work		
С	Inertia		
D	Energy		
Coi	rrect Ans: C		
Thou	mcode : LH1002		
Q2			
A	only mass		
В	only energy		
С	both mass and energy		
D	neither mass nor energy		
Coi	rrect Ans: D		
74	d		
<u>1te</u>	<u>ncode</u> : LH1003 : The dimensional formula ML ² T ⁻³ represents		
A	Work		
В	Power		
С	Force		
D	Momentum		
Coi	rrect Ans: B		
Ito	mondo : I H1004		
	 Itemcode: LH1004 Q4: A rectangle ABCD has sides AB = CD = 80 mm and BC = DA = 60 mm. Forces of 150 N each act along AB and CD, and forces of 100 N each act along BC and DA. The resultant moment of the force system is 		
A	8000 Nmm		
В	9000 Nmm		
С	1000 Nmm		
D	17000 Nmm		
Coi	rrect Ans: D		
Ite	<u>Itemcode</u> : LH1005		
Q5			
A	0°		
В	60°		

С	900		
D	120°		
Co	Correct Ans: D		
Itemcode: LH1006			
06	All of the following are correct statements, except		

 Itemcode : LH1006

 Q6:
 All of the following are correct statements, except

 A
 The member of base and supplementary units in SI system are seven and two respectively.

 B
 The unit of amount of substance in SI system is called mole

 C
 Farce is a vector quantity whereas displacement is a scalar quantity

 D
 Space is a region which extends in all directions and contains everything in it

Itemcode : LH1008

Q8: Which of the followings is the supplementary unit in SI system?

A mole

B ampere

C candela

D radian

Correct Ans: D

Itemcode: LH1009

Q9: Consider the following statements

Light year is a unit of time.
Momentum and impulse have the same units
A body falling freely under gravitational force has no weight Which of these is / are false statement / statements?

A 1 and 3

2 and 3
1 and 2
1 only

Со	Correct Ans: D		
Itemcode: LH1010 Q10: In a four stroke IC engine turning 1500 rev/min, how many revolutions the crankshaft will have to make for every power stroke?			
A	3000		
В	1500		
С	750		
D	375		
Со	Correct Ans: C		
1	Itemcode: LH1011 Q11: For analysis purposes, a body can be modeled as rigid if:		

It dimensions are small compared with the coordinates describing its motion

It has continuous distribution of mass.

It is characterized by some preferred configuration of its own

Relative deformation between its parts is negligible

Correct Ans: D

Itemcode: LH1012
Q12: Which is not true in the context of effect of cold working on metals?

A loss of ductility

B increase of strength and hardness of metal

C refinement in grain structure

D surface finish is improved and close tolerances maintained

Correct Ans: C

Itemcode: LH1013
Q13: All of the following are scalar quantities except

A Energy
B Temperature
C Time
D Displacement

Correct Ans: D

Itemcode: LH1014
Q14: Dimensions for moment of momentum are

A FLT
B FL⁻¹
C

	FLT ⁻¹	
D	FL ⁻¹ T ⁻¹	
Со	rrect Ans: S	(S Denotes question scrapped and no credit to Candidates.)

Itemcode: LH1015
Q15: The dimensional formula ML²T⁻³ represents

A Work

B Power

C Force

Momentum

Correct Ans: B

Itemcode: LH1016
Q16: In piercing and blanking operation, the clearance between punch and die solely depends on

A diameter of the hole required

B thickness of sheet metal

C number of pieces to be made

D capacity and type of press

Correct Ans: B

Itemcode: LH1017

Correct Ans: C

Q17: Force F is given in terms of time t and distance x by $F = a \sin ct + b \cos dx$ Then the dimensions of $\frac{a}{b}$ and $\frac{c}{a}$ are given by $A \frac{MLT^{-2}, M^{\circ}L^{\circ}T^{-1}}{B MLT^{-2}, M^{\circ}L^{-1}T^{\circ}}$ $C \frac{M^{\circ}L^{\circ}T^{\circ}, M^{\circ}L^{-1}T^{-1}}{D M^{\circ}L^{-1}T^{\circ}}$

Itemcode: LH1018
Q18: Newton's second law of motion connects

A change of momentum and velocity

B momentum and acceleration

C momentum and rate of change of force

D	rate of change of momentum and external force	
Cor	rect Ans: D	
74	van de a Maraga	
	Itemcode: LH1019Q19: Vertically hanging curtains between the compartments in an aero plane are seen to bend forward. This indicates that the aero plane is	
A	taking off	
В	moving steadily at constant altitude	
С	slowing down for landing	
D	taking a bend	
Cor	Correct Ans: C	
<u>Iter</u>	Itemcode : LH1020	

Itemcode : LH1020

Q20: A force which combines with two or more forces to produce equilibrium is called

A resultant

B equilibrant

C couple

D moment

Correct Ans: B

| Itemcode : LH1021 | Q21: The recrystallisation temperature is the temperature at which new strain-free grains are formed from the earlier deformed once. For steel this temperature is close to

A	350°C
B	560°
C	800°C
D	1025°C
C	Correct Ans: S

 Itemcode : LH1022

 Q22: Identify the wrong statement pertaining to hot working of metals.

 A
 metal becomes plastic and causes growth of grains

 B
 close tolerances can be maintained

 C
 rapid and economical process

 D
 power required to finish the part from ingot is less

 Correct Ans: B

Itemcode: LH1023
Q23: Stamping is the process of

A producing flutes or corrugations

В	producing seamless tubes
С	shaping thin sheets by pressing them against a form
D	printing letters and numbers on metal sheets
Correct Ans: C,D	

Itemcode: LH1024
Q24: In sheet metal work, the cutting force on the tool can be reduced by

A grinding the cutting edges sharp

B increasing the hardness of tool

C providing shear angle on the tool

D increasing the hardness of die

Correct Ans: A,C

Itemcode: LH1025
Q25: Cold working of metals is carried out

A below the recrysatallisation temperature

B at the recrysatallisation temperature

C above the recrysatallisation temperature

D working temperature depends upon physical conditions of the work piece

Correct Ans: A

Itemcode: LH1026
Q26: Given that $\vec{P} + \vec{Q} = \vec{R}$ and also P = Q = R. Then the angle between vectors \vec{P} and \vec{Q} is

A 0B $\frac{\Pi}{3}$ C $\frac{2\Pi}{3}$ D P

Correct Ans: C

 Itemcode : LH1027

 Q27: The control gear to epicylic gear unit is called

 A
 planet gear

 B
 sun gear

 C
 ring gear

 D
 internal gear

 Correct Ans: B

	<u>Itemcode</u> : LH1028 Q28: For successful extrusion, the metal should be	
A	ductile	
В	malleable	
С	plastic	
D	tough	
Cor	rect Ans: A,C	
	ncode: LH1029 3: In metals subjected to cold working, strain hardening effect is due to mechanism.	
A	slip	
В	twinning	
С	dislocation	
D	fracture	
Cor	rect Ans: C	
	ncode: LH1030 3: A sheet of metal is being cut along its length in a straight line. Such a cutting operation is called	
A	parting	
В	lancing	
С	crimping	
D	slitting	
Cor	rect Ans: D	
l .	ncode: LH1031 L: The process of cutting a flat sheet to the desired shape is known as	
A	blanking	
В	trimming	
С	stamping	
D	piercing	
Cor	rect Ans: A	
	ncode: LH1032 2: In deep drawing of sheets, the value of limiting draw ratio depends on	
A	percentage elongation of sheet metal	
В	yield strength of sheet metal	
С	type of press used	
D	thickness of sheet	
Cor	rect Ans: A,B	

Itemcode : LH1033 Q33: Copper sheets are manufactured by		
A	drawing	
В	rolling	
С	extruding	
D	hammering	
Co	Correct Ans: B	

Itemcode: LH1034
Q34: In drop forging, forging is done by dropping

A the work piece at high velocity

B the hammer at high velocity

C the die with hammer at high velocity

D a weight on hammer to produce the requisite impact

Correct Ans: C

Itemcode : LH1035

Q35: A system of three forces acts on a body and keeps it in equilibrium. The forces need to be:

A coplanar only

B concurrent only

C coplanar as well as concurrent

D coplanar but may or may not be concurrent

Correct Ans: C

 Itemcode: LH1036

 Q36: Which is the false statement in relation to propeller shaft?

 A
 it transmits the drive from the gear box to the rear axle in front engine, rear drive vehicles

 B
 a long propeller shaft tends to sag and whirl

 C
 shaft length may be decreased by using a divided propeller shaft supported by intermediate bearings

 D
 decreasing the shaft length to half would decrease the critical speed two times

 Correct Ans: D

Itemcode: LH1037

Q37: The extrusion process used for the production of tooth paste tube is/are

- 1. Tube extrusion
- 2. Forward extrusion
- 3. Impact extrusion

Select the correct answer using the codes given below:

A 1 only

В	1 and 2	
\vdash		
С	2 and 3	
D	3 only	
Co	Correct Ans: D	

 Itemcode : LH1038

 Q38: In sheet metal working, shear is provided on punches and dies so that

 A
 press load is reduced

 B
 good cut edge is obtained

 C
 warping of sheet is minimized

 D
 cut blanks are straight

| Cast iron | Cast

Itemcode: LH1040
Q40: Which is the false statement about a torque converter?

A the blades have a curved shape

B the oil is driven by the impeller unit

C the stator unit redirects the flow of oil to the impeller

D maximum torque multiplication occurs at low speed

Correct Ans: D

Itemcode: LH1042

Correct Ans: A

Correct Ans: C

Q42: The process of putting a rod though several dies of decreasing diameter is known as

Α	rolling
В	stretch forming
С	trimming
D	wire drawing
Cor	rrect Ans: D

Correct Ans: B

Itemcode: LH1046
Q46: The refrigerant Freon-12 belongs to the family of

A methanes

B ethanes

C ketones

D	Aldehydes
Cor	rect Ans: A
Iter	mcode : LH1047
Q4	7: The property of a material by which it can be rolled into sheets is called
Α	elasticity
В	plasticity
С	ductility
D	malleability
Cor	rect Ans: D

 Itemcode : LH1048

 Q48: Which aspect is not correct in the context of manual transmission; conventionally called gear boxes ?

 A
 simplicity of design

 B
 high friction losses

 C
 low initial cost

 D
 lot of fatigue to driver in operation

 Correct Ans: B

 Itemcode : LH1049

 Q49: Which one is the wrong statement about forging?

 A
 are uniform in density as well as in dimensions

 B
 have high ductility and strength

 C
 offer great resistance to fatigue and impact loads

 D
 are less reliable

 Correct Ans: D

Itemcode: LH1050
 Q50: The resultant of two forces P and Q is R. If one of the forces is reversed in direction, the resultant is S. Then for the identity R² + S² = 2 (P² + Q²) to hold good,
 A forces are collinear
 B forces act at right angles to each other
 C forces are inclined at 60° to each other
 D forces can have any angle of inclination between them
 Correct Ans: B

Itemcode: LH1051

Q51: Which process involves increasing of the cross-sectional area by pressing or hammering in a direction parallel to the original ingot axis?

A peening

В	swaging	
С	upsetting	
D	setting down	
Cor	rect Ans: C	
Itemcode: LH1052 Q52: The speed of particle executing simple harmonic motion with amplitude a is half of the maximum speed. At that instant, displacement of the particle is		
A	a/2	
В	√3/2 a	
С	2a/√3	
D	3√2/a	
Cor	rect Ans: B	
	ncode: LH1053 Identify the process in which the metal is shaped by intermittent blows on it	
A	hammering	
В	peening	
С	parkerising	
D	swaging	
Cor	rect Ans: A,D	
	ncode: LH1054 The piston of a steam engine executes simple harmonic motion when the crank rotates with 4 rad/sec with a stroke of 2 m. At a certain instant, the piston is at a distance of 0.5 m from the mean position. The acceleration of the piston is	
A	2 Π ²	
В	$4 \Pi^2$	

 Itemcode : LH1055

 Q55: The maximum speed of the bob of a seconds pendulum is stated to be 1 m/s. Its maximum acceleration would be

 A
 1.57 m/s²

 B
 3.14 m/s²

 C
 5.62 m/s²

8 Π^2

 $16\Pi^2$

Correct Ans: C

С

_	
D	6.48 m/s ²
Correct Ans: B	
<u>Iter</u>	ncode: LH1056
Q56: Which is not true in the context of the free wheel clutch ?	
A	simplified gear changing at low speeds
В	transmission subjected to greater wear and tear
С	effective use of brakes needed to stop the vehicle on a downward slope
D	appreciable saving in fuel on long downward slope
Correct Ans: B	

Itemcode : LH1058	Q58: Trimming is the process associated with	
A	electroplating	ultrasonic machining
C	forging	tungsten-inert gas welding
Correct Ans: C		

 Itemcode : LH1059

 Q59: Measurements have been made for the Young's modulus of elasticity for mild steel specimen both in tension and compression. The ratio E_t / E_c will be approximately equal to

 A
 0.5

 B
 0.75

 C
 1.0

 D
 1.25

 Correct Ans: C

Itemcode: LH1060

Q60: Which of the following materials has a non-linear stress-strain curve?

Α	low carbon steel
В	copper
С	aluminium
D	rubber
Correct Ans: D	
C01	

 Itemcode : LH1061

 Q61: When mild steel is subjected to tensile loading, its fracture will conform to

 A
 star shape

 B
 granular shape

 C
 fibrous type

 D
 cup and cone shape

 Correct Ans: D

Itemcode: LH1062
Q62: When a cast iron specimen is tested in compression, the fracture occurs

A along an oblique plane
B along the axis of load
C perpendicular to the axis of load
D there is no fracture at all

Correct Ans: A

Itemcode : LH1063

Q63: Which one of the following mechanical properties is provided by the Notched bar test?

A hardness

B resilience

C impact strength

D endurance limit

Correct Ans: C

Itemcode
: LH1064

Q64: The charpy test is conducted to measure

A
toughness

B
creep strength

C
fatigue strength

D
elastic strength of a material

Correct Ans: A

Itemcode: LH1065

Q65: Pick the odd one out	
A	stiffness
В	resilience
С	endurance limit
D	elastic strength
Correct Ans: C	

Itemcode : LH1066

Q66: Brinell number of a metal or an alloy is a measure of its

A tensile strength

B toughness

C malleability

D hardness

Correct Ans: D

Remcode: LH1067
 Q67: All of the following statements are correct, except
 A material that undergoes no deformation till its yield point, but thereafter flows at a constant stress is known as rigid plastic
 The limit of proportionality and the point of elastic limit coincide for ductile materials
 An elastic material recovers fully after unloading but not instantaneously
 A zero value of the Young's modulus of elasticity implies that the material is highly elastic

(S Denotes question scrapped and no credit to Candidates.)

Correct Ans: S

Itemcode: LH1070 Q70: The deformation per unit length in the direction of load is called	
A	lateral strain
В	shear strain
С	linear or longitudinal strain
D	volumetric strain
Correct Ans: C	
Itemcode: LH1071	

| Itemcode : LH1071 | Q71: The coefficient of friction for the clutch facings is approximately | A | 1.0 | B | 0.75 | C | 0.4 | D | 0.1 | Correct Ans: C

Itemcode: LH1072
Q72: Which is true in respect of clutch plate and engine flywheel in an automobile?

A the clutch plate gets connected to the flywheel when the driver presses the clutch pedal

B the clutch plate gets disconnected when the clutch pedal is pressed

C clutch plate is always connected to the flywheel

D the clutch plate always remains disconnected from the flywheel

Correct Ans: B

Itemcode: LH1074
Q74: The brake bleeding system serves to free the system from

A air

B excess pressure

C excess fluid

D vacuum

Itemcode: LH1075
Q75: A system and its environment put together constitute

A an adiabatic system

B an isolated system

C a segregated system

D a homogeneous system

Correct Ans: B

Correct Ans: A

Itemcode: LH1076
Q76: Stress represents the

A external force acting on the body

B pressure setup within the body material

C force by which the material of the body opposes the deformation

D resistance per unit area to deformation by internal forces

Correct Ans: D

Itemcode: LH1077
Q77: A fluid is a substance that

a is practically incompressible and inviscid (non-viscous)

b cannot be subjected to shear forces

c cannot remain at rest under the action of any shear force

always expands until it fills any container

Correct Ans: C

Itemcode: LH1078
Q78: Which aspect is not true in related to process layout?

A flexibility of equipment and personnel

B Product planning and control is difficult and costly

C Handling and back-tracking of material is too much

D Specialized and strict supervision is required

Correct Ans: D

 Itemcode : LH1079

 Q79: When subjected to shear force, a fluid

 A
 deforms continuously only for large shear forces

 B
 deforms continuously only for large shear stress

 C
 deforms continuously no matter how small the shear stress may be

Itemcode : LH1081

Correct Ans: B

Q81: Which of the following is correct about the river Ravi?

(i) It is fed by the glacier Bara Banghal.

(ii) The Jalal river is one of its tributaries.

(iii) It flows mostly in Kinnaur and Chamba.

(iv) Its total length in Himachal Pradesh is about 450 miles.

A (i) & (iv).

B (iii) & (ii).

c (i) only.

D (iii) only.

Correct Ans: C

Itemcode : LH1082

Q82: Find out the correct match of the following passes with the regions they connect:

(i) Padri Pass - (a) Chamba and Kangra.

(ii) Sari Galu - (b) Kullu and Kangra.

(iii) Shinka - (c) Kinnaur and Garhwal.

(iv) Chauri - (d) Chamba and Jammu.

(i) - (d); (ii) - (b); (iii) - (c); (iv) - (a).

 \mathbf{B} (ii) – (a); (i) – (c); (iii) – (d); (iv) – (b).

 \mathbf{c} (iii) – (b); (iv) – (d); (i) – (a); (ii) – (c).

 \mathbf{p} (iv) – (c); (iii) – (a); (ii) – (b); (i) – (d).

Correct Ans: A

Itemcode: LH1083

Q83: Identify the three districts of Himachal Pradesh which had the highest literacy rate in 2011:

A Hamirpur, Una & Shimla.

В	Hamirpur, Una & Kangra.
c	Hamirpur, Solan & Shimla.
D	Hamirpur, Solan & Una.
Correct Ans: B	

Itemcode : LH1084
Q84: During which Five-Year Plan, the Integrated Tribal Development Projects were constituted?

A First Five Year Plan.

B Third Five Year Plan.

C Fourth Five Year Plan.

D Fifth Five Year Plan.

Correct Ans: D

Itemcode: LH1085
Q85: Identify the total amount proposed in the Annual Plan Budget for 2020-21 in Himachal Pradesh:

A Rs. 6700 Crore.

B Rs. 7900 Crore.

C Rs. 7500 Crore.

D Rs. 8200 Crore.

Correct Ans: B

Itemcode: LH1086

Q86: Which of the following is true about the peasants holding above 10 hectares of land as per the Agriculture Census of 2010-11?

(i) Below One p.c.

(ii) Above One p.c.

(iii) Above Two p.c.

(iv) About Three p.c.

A (i) only.

B (iii) only.

C (ii) and (iv) only.

C (iv) only.

C (iv) only.

C (iv) only.

| Revision | Revision

Naggar and Manali Valley. Jubbal and Rohru Valleys of Shimla. Correct Ans: D Itemcode: LH1088 Q88: Which of the following is true about the Beti Hai Anmol Yojna? (i) It provides a post-birth grant of Rs. 12000 and free education upto graduation to one girl child of BPL families. (ii) Besides a post-birth grant of Rs. 12000, it provides free education upto graduation to two girl children of BPL families. (iii) A post-birth grant of Rs. 12000, and free education to one girl child upto graduation to BPL families having annual income below Rs. 30000 per annum. (iv) It provides free education to all Scheduled Caste girls and a grant of Rs. 15000 per year. (i) and (ii). (iii) and (iv). В (i) only. С (ii) only. D Correct Ans: D Itemcode: LH1089 Q89: The rulers of which Punjab Hill States did not help the British army in its war with the Gurkhas? Nalagarh. Bashahr. В C Keonthal Jubbal. D Correct Ans: C

Itemcode : LH1090

Q90: Which is not correct about the effect of climate change on the Water Resources of Himachal Pradesh:

A
Some perennial rivers have become seasonal ones.

B
Above 90% of glaciers are completely extinct now.

C
The riverain ecology is affected.

D
The global warming has affected Himachal Pradesh adversely.

Correct Ans: B

Itemcode: LH1091

Q91: The Palk Strait divides India from:

Α	Myanmar.
В	China.
С	Thailand.
D	Sri Lanka.
Correct Ans: D	

Itemcode : LH1092

Q92: Which of the following is correct about the Indian economy becoming \$ 5 trillion in the next six years, i.e. by 2026-27?

- (i) If it grows at an annual average of 8.6% during the next six years.
- (ii) If it grows at an annual average of 11.6% during the next six years.
- (iii) Only if it grows at an annual average of 8.8% during the next six years.
- (iv) Only if it grows at an annual average of 7.6% during the next six years.
- A (iii) only.

 B (ii) only.

 C (i) & (iii).

 D (ii) & (iv).

 Correct Ans: B

Itemcode: LH1093

Q93: The Chief Election Commissioner of India is:

A Sushil Chandra.

B Sunil Arora.

C V.S. Ramadevi.

M.S. Gill.

Correct Ans: A

Itemcode: LH1094

Q94: Which of the following Constitutional Amendment reduced the age of voting rights from 21 to 18 years?

- (i) 97th Amendment.
- (ii) 51st Amendment.
- (iii) 61st Amendment.
- (iv) 71st Amendment.

Α	(i) & (ii).
В	(iii) & (iv).
С	(iii) only.
D	(ii) only.
Correct Ans: C	

Itemcode: LH1095

Q95: Find out the correct match of the following Indian Dancers' association with the Indian Classical Dances:

- (i) Sonal Man Singh (a) Kathakali.
- (ii) Birju Maharaj (b) Bharatnatyam.
- (iii) Udai Shankar (c) Kathak.
- (iv) Nirmala Mehta (d) Manipuri.
- A (i) (b); (ii) (c); (iii) (a); (iv) (d).
- \mathbf{B} (i) (d); (ii) (b); (iii) (c); (iv) (a).
- \mathbf{c} (ii) (c); (iii) (a); (iv) (d); (i) (b).
- \mathbf{D} (iv) (b); (ii) (d); (iii) (a); (i) (c).

Correct Ans: A,C

Itemcode: LH1096

Q96: For which following disease, the Nobel Prize in Physiology or Medicine was awarded to three Scientists in 2020?

- For the discovery of Ebola Virus.
- **B** For making a big break-through in cancer research.
- **c** For the discovery of Hepatitis C. Virus.
- For the discovery of Chikengunia Virus.

Correct Ans: C

Itemcode: LH1097

Q97: Which of the following is true about the Universal Declaration of Human Rights?

- (i) It was adopted by the U.N. General Assembly on December 10, 1948.
- (ii) The U.N. General Assembly adopted it on November 10, 1948.
- (iii) It was adopted, despite the dissent of a few States.
- (iv) It was adopted without any dissent of a State.
- **A** (ii), (iii).
- **B** (i), (iv).

С	(iii), (i).
D	(iv), (ii).
Correct Ans: B	

 Itemcode : LH1098

 Q98:
 Which of the following is true about the Yalta Conference?

 A
 It was convened after the end of the Second World War to decide the future scenario after the defeat of Germany.

 B
 The USA was represented by its President H. Truman in it.

 C
 Britain was represented by its Prime Minister W. Churchill.

 D
 Soviet Union was represented by Lenin.

| Itemcode : LH1099 | Q99: Which of the following date is celebrated as the International Day for the Preservation of the Ozone layer?

A | September 16. |
B | September 20. |
C | September 12. |
D | September 18. |
Correct Ans: A