ME : MECHANICAL ENGINEERING

Duration: Three Hours *Maximum Marks*: 100

Read the following instructions carefully.

1. Do not open the seal of the Question Booklet until you are asked to do so by the invigilator.
2. Take out the **O**ptical **R**esponse **S**heet (**ORS)** from this Question Booklet **without breaking the seal** and read the instructions printed on the ORS carefully. If you find that either
   a. The Question Booklet Code printed at the right hand top corner of this page does not match with the Question Booklet Code at the right hand top corner of the **ORS** or
   b. The Question Paper Code preceding the Registration number on the **ORS** is not **ME**, then exchange the booklet immediately with a new sealed Question Booklet.
3. On the right hand side of the **ORS,** using ONLY a **black ink ballpoint pen**, (i) darken the appropriate bubble under each digit of your registration number and (ii) write your registration number, your name and name of the examination centre and put your signature at the specified location.
4. This Question Booklet contains **16** pages including blank pages for rough work. After you are permitted to open the seal, check all pages and report discrepancies, if any, to the invigilator.
5. There are a total of 65 questions carrying 100 marks. All these questions are of objective type. Each question has only **one** correct answer. Questions must be answered on the left hand side of the **ORS** by darkening the appropriate bubble (marked A, B, C, D) using ONLY a **black ink ballpoint pen** against the question number. **For each question darken the bubble of the correct answer**. More than one answer bubbled against a question will be treated as an incorrect response.
6. Since bubbles darkened by the black ink ballpoint pen **cannot** be erased, candidates should darken the bubbles in the ORS **very carefully**.
7. Questions Q.1 – Q.25 carry 1 mark each. Questions Q.26 – Q.55 carry 2 marks each. The 2 marks questions include two pairs of common data questions and two pairs of linked answer questions. The answer to the second question of the linked answer questions depends on the answer to the first question of the pair. If the first question in the linked pair is wrongly answered or is not attempted, then the answer to the second question in the pair will not be evaluated.
8. Questions Q.56 – Q.65 belong to General Aptitude (GA) section and carry a total of 15 marks. Questions Q.56 – Q.60 carry 1 mark each, and questions Q.61 – Q.65 carry 2 marks each.
9. Questions not attempted will result in zero mark and wrong answers will result in **NEGATIVE** marks. For all 1 mark questions, ⅓ mark will be deducted for each wrong answer. For all 2 marks questions, ⅔ mark will be deducted for each wrong answer. However, in the case of the linked answer question pair, there will be negative marks only for wrong answer to the first question and no negative marks for wrong answer to the second question.
10. Calculator is allowed whereas charts, graph sheets or tables are **NOT** allowed in the examination hall.
11. Rough work can be done on the Question Booklet itself. Blank pages are provided at the end of the Question Booklet for rough work.
12. Before the start of the examination, write your name and registration number in the space provided below using a black ink ballpoint pen.

Name									
Registration Number	**ME**								

Q.1 to Q.25 carry one mark each.

Q.1 The partial differential equation $\frac{\partial u}{\partial t}+u\frac{\partial u}{\partial x}=\frac{\partial^2 u}{\partial x^2}$ is a

(A) linear equation of order 2
(B) non-linear equation of order 1
(C) linear equation of order 1
(D) non-linear equation of order 2

Q.2 The eigenvalues of a symmetric matrix are all

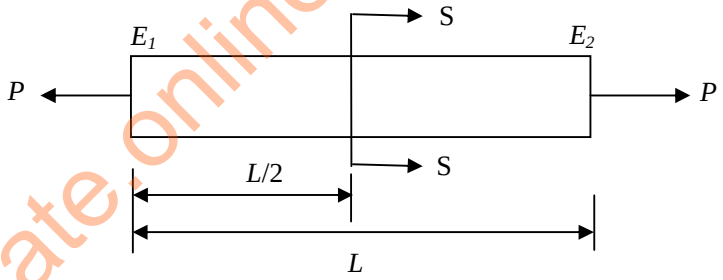
(A) complex with non-zero positive imaginary part.
(B) complex with non-zero negative imaginary part.
(C) real.
(D) pure imaginary.

Q.3 Match the **CORRECT** pairs.

Numerical Integration Scheme	Order of Fitting Polynomial
P. Simpson's 3/8 Rule	1. First
Q. Trapezoidal Rule	2. Second
R. Simpson's 1/3 Rule	3. Third

(A) P-2, Q-1, R-3 (B) P-3, Q-2, R-1 (C) P-1, Q-2, R-3 (D) P-3, Q-1, R-2

Q.4 A rod of length L having uniform cross-sectional area A is subjected to a tensile force P as shown in the figure below. If the Young's modulus of the material varies linearly from E_1 to E_2 along the length of the rod, the normal stress developed at the section-SS is

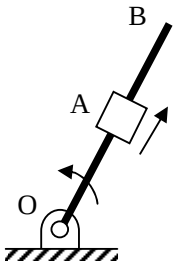


(A) $\frac{P}{A}$ (B) $\frac{P(E_1-E_2)}{A(E_1+E_2)}$ (C) $\frac{PE_2}{AE_1}$ (D) $\frac{PE_1}{AE_2}$

Q.5 Two threaded bolts A and B of same material and length are subjected to identical tensile load. If the elastic strain energy stored in bolt A is 4 times that of bolt B and the mean diameter of bolt A is 12 *mm*, the mean diameter of bolt B in *mm* is

(A) 16 (B) 24 (C) 36 (D) 48

Q.6 A link OB is rotating with a constant angular velocity of 2 *rad/s* in counter clockwise direction and a block is sliding radially outward on it with an uniform velocity of 0.75 *m/s* with respect to the rod, as shown in the figure below. If OA = 1 *m*, the magnitude of the absolute acceleration of the block at location A in m/s^2 is



(A) 3 (B) 4 (C) 5 (D) 6

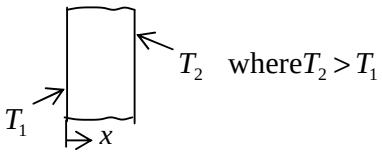
Q.7 For steady, fully developed flow inside a straight pipe of diameter *D*, neglecting gravity effects, the pressure drop Δp over a length *L* and the wall shear stress τ_w are related by

(A) $\tau_w = \frac{\Delta p\, D}{4L}$ (B) $\tau_w = \frac{\Delta p\, D^2}{4L^2}$ (C) $\tau_w = \frac{\Delta p\, D}{2L}$ (D) $\tau_w = \frac{4\Delta pL}{D}$

Q.8 The pressure, dry bulb temperature and relative humidity of air in a room are 1 *bar*, 30°*C* and 70%, respectively. If the saturated steam pressure at 30°*C* is 4.25 *kPa*, the specific humidity of the room air in *kg water vapour/kg dry air* is

(A) 0.0083 (B) 0.0101 (C) 0.0191 (D) 0.0232

Q.9 Consider one-dimensional steady state heat conduction, without heat generation, in a plane wall; with boundary conditions as shown in the figure below. The conductivity of the wall is given by $k = k_0 + bT$; where k_0 and *b* are positive constants, and *T* is temperature.



As *x* increases, the temperature gradient (dT/dx) will

(A) remain constant (B) be zero (C) increase (D) decrease

Q.10 In a rolling process, the state of stress of the material undergoing deformation is

(A) pure compression (B) pure shear
(C) compression and shear (D) tension and shear

Q.11 Match the **CORRECT** pairs.

Processes	Characteristics / Applications
P. Friction Welding	1. Non-consumable electrode
Q. Gas Metal Arc Welding	2. Joining of thick plates
R. Tungsten Inert Gas Welding	3. Consumable electrode wire
S. Electroslag Welding	4. Joining of cylindrical dissimilar materials

(A) P-4, Q-3, R-1, S-2
(B) P-4, Q-2, R-3, S-1
(C) P-2, Q-3, R-4, S-1
(D) P-2, Q-4, R-1, S-3

Q.12 A metric thread of pitch 2 *mm* and thread angle 60° is inspected for its pitch diameter using 3-wire method. The diameter of the best size wire in *mm* is

(A) 0.866 (B) 1.000 (C) 1.154 (D) 2.000

Q.13 Customers arrive at a ticket counter at a rate of 50 per *hr* and tickets are issued in the order of their arrival. The average time taken for issuing a ticket is 1 *min*. Assuming that customer arrivals form a Poisson process and service times are exponentially distributed, the average waiting time in queue in *min* is

(A) 3 (B) 4 (C) 5 (D) 6

Q.14 In simple exponential smoothing forecasting, to give higher weightage to recent demand information, the smoothing constant must be close to

(A) –1 (B) zero (C) 0.5 (D) 1.0

Q.15 A steel bar 200 *mm* in diameter is turned at a feed of 0.25 *mm/rev* with a depth of cut of 4 *mm*. The rotational speed of the workpiece is 160 *rpm*. The material removal rate in mm^3/s is

(A) 160 (B) 167.6 (C) 1600 (D) 1675.5

Q.16 A cube shaped casting solidifies in 5 *min*. The solidification time in *min* for a cube of the same material, which is 8 times heavier than the original casting, will be

(A) 10 (B) 20 (C) 24 (D) 40

Q.17 For a ductile material, toughness is a measure of

(A) resistance to scratching
(B) ability to absorb energy up to fracture
(C) ability to absorb energy till elastic limit
(D) resistance to indentation

Q.18 In order to have maximum power from a Pelton turbine, the bucket speed must be

(A) equal to the jet speed.
(B) equal to half of the jet speed.
(C) equal to twice the jet speed.
(D) independent of the jet speed.

Q.19 Consider one-dimensional steady state heat conduction along x-axis ($0 \le x \le L$), through a plane wall with the boundary surfaces ($x=0$ and $x=L$) maintained at temperatures of 0°*C* and 100°*C*. Heat is generated uniformly throughout the wall. Choose the **CORRECT** statement.

(A) The direction of heat transfer will be from the surface at 100°*C* to the surface at 0°*C*.
(B) The maximum temperature inside the wall must be greater than 100°*C*.
(C) The temperature distribution is linear within the wall.
(D) The temperature distribution is symmetric about the mid-plane of the wall.

Q.20 A cylinder contains 5 m^3 of an ideal gas at a pressure of 1 *bar*. This gas is compressed in a reversible isothermal process till its pressure increases to 5 *bar*. The work in *kJ* required for this process is

(A) 804.7 (B) 953.2 (C) 981.7 (D) 1012.2

Q.21 A long thin walled cylindrical shell, closed at both the ends, is subjected to an internal pressure. The ratio of the hoop stress (circumferential stress) to longitudinal stress developed in the shell is

(A) 0.5 (B) 1.0 (C) 2.0 (D) 4.0

Q.22 If two nodes are observed at a frequency of 1800 *rpm* during whirling of a simply supported long slender rotating shaft, the first critical speed of the shaft in *rpm* is

(A) 200 (B) 450 (C) 600 (D) 900

Q.23 A planar closed kinematic chain is formed with rigid links PQ = 2.0 *m*, QR = 3.0 *m*, RS = 2.5 *m* and SP = 2.7 *m* with all revolute joints. The link to be fixed to obtain a double rocker (rocker-rocker) mechanism is

(A) PQ (B) QR (C) RS (D) SP

Q.24 Let X be a normal random variable with mean 1 and variance 4. The probability $P\{X < 0\}$ is

(A) 0.5
(B) greater than zero and less than 0.5
(C) greater than 0.5 and less than 1.0
(D) 1.0

Q.25 Choose the **CORRECT** set of functions, which are linearly dependent.

(A) $\sin x$, $\sin^2 x$ and $\cos^2 x$
(B) $\cos x$, $\sin x$ and $\tan x$
(C) $\cos 2x$, $\sin^2 x$ and $\cos^2 x$
(D) $\cos 2x$, $\sin x$ and $\cos x$

Q.26 to Q.55 carry two marks each.

Q.26 The following surface integral is to be evaluated over a sphere for the given steady velocity vector field $F = x\boldsymbol{i} + y\boldsymbol{j} + z\boldsymbol{k}$ defined with respect to a Cartesian coordinate system having ***i***, ***j*** and ***k*** as unit base vectors.

$$\iint_S \frac{1}{4}(\boldsymbol{F}.\boldsymbol{n})\, dA$$

where S is the sphere, $x^2 + y^2 + z^2 = 1$ and ***n*** is the outward unit normal vector to the sphere. The value of the surface integral is

(A) π (B) 2π (C) $3\pi/4$ (D) 4π

Q.27 The function $f(t)$ satisfies the differential equation $\frac{d^2 f}{dt^2} + f = 0$ and the auxiliary conditions, $f(0) = 0$, $\frac{df}{dt}(0) = 4$. The Laplace transform of $f(t)$ is given by

(A) $\frac{2}{s+1}$ (B) $\frac{4}{s+1}$ (C) $\frac{4}{s^2+1}$ (D) $\frac{2}{s^4+1}$

Q.28 Specific enthalpy and velocity of steam at inlet and exit of a steam turbine, running under steady state, are as given below:

	Specific enthalpy (*kJ/kg*)	Velocity (*m/s*)
Inlet steam condition	3250	180
Exit steam condition	2360	5

The rate of heat loss from the turbine per *kg* of steam flow rate is 5 *kW*. Neglecting changes in potential energy of steam, the power developed in *kW* by the steam turbine per *kg* of steam flow rate, is

(A) 901.2 (B) 911.2 (C) 17072.5 (D) 17082.5

Q.29 Water is coming out from a tap and falls vertically downwards. At the tap opening, the stream diameter is 20 *mm* with uniform velocity of 2 *m/s*. Acceleration due to gravity is 9.81 m/s^2. Assuming steady, inviscid flow, constant atmospheric pressure everywhere and neglecting curvature and surface tension effects, the diameter in *mm* of the stream 0.5 *m* below the tap is approximately

(A) 10 (B) 15 (C) 20 (D) 25

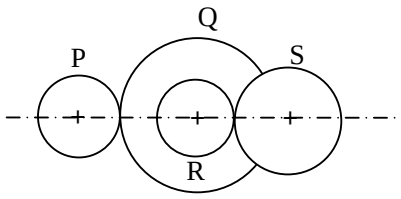
Q.30 A steel ball of diameter 60 *mm* is initially in thermal equilibrium at 1030°*C* in a furnace. It is suddenly removed from the furnace and cooled in ambient air at 30°*C*, with convective heat transfer coefficient h = 20 W/m^2K. The thermo-physical properties of steel are: density ρ = 7800 kg/m^3, conductivity k = 40 *W/mK* and specific heat c = 600 *J/kgK*. The time required in *seconds* to cool the steel ball in air from 1030°*C* to 430°*C* is

(A) 519 (B) 931 (C) 1195 (D) 2144

Q.31 A flywheel connected to a punching machine has to supply energy of 400 *Nm* while running at a mean angular speed of 20 *rad/s*. If the total fluctuation of speed is not to exceed ±2%, the mass moment of inertia of the flywheel in $kg\text{-}m^2$ is

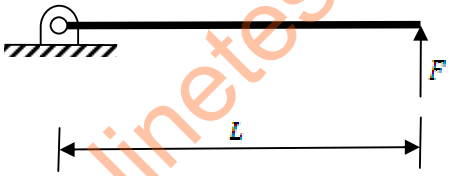
(A) 25 (B) 50 (C) 100 (D) 125

Q.32 A compound gear train with gears P, Q, R and S has number of teeth 20, 40, 15 and 20, respectively. Gears Q and R are mounted on the same shaft as shown in the figure below. The diameter of the gear Q is twice that of the gear R. If the module of the gear R is 2 *mm*, the center distance in *mm* between gears P and S is



(A) 40 (B) 80 (C) 120 (D) 160

Q.33 A pin jointed uniform rigid rod of weight W and length L is supported horizontally by an external force F as shown in the figure below. The force F is suddenly removed. At the instant of force removal, the magnitude of vertical reaction developed at the support is



(A) zero (B) $W/4$ (C) $W/2$ (D) W

Q.34 Two cutting tools are being compared for a machining operation. The tool life equations are:

Carbide tool: $VT^{1.6} = 3000$

HSS tool: $VT^{0.6} = 200$

where V is the cutting speed in *m/min* and T is the tool life in *min*. The carbide tool will provide higher tool life if the cutting speed in *m/min* exceeds

(A) 15.0 (B) 39.4 (C) 49.3 (D) 60.0

Q.35 In a CAD package, mirror image of a 2D point P(5,10) is to be obtained about a line which passes through the origin and makes an angle of 45° counterclockwise with the X-axis. The coordinates of the transformed point will be

(A) (7.5, 5) (B) (10, 5) (C) (7.5, –5) (D) (10, –5)

Q.36 A linear programming problem is shown below.

Maximize $3x + 7y$

Subject to $3x + 7y \leq 10$
$4x + 6y \leq 8$
$x, y \geq 0$

It has

(A) an unbounded objective function.
(B) exactly one optimal solution.
(C) exactly two optimal solutions.
(D) infinitely many optimal solutions.

Q.37 Cylindrical pins of $25^{+0.020}_{+0.010}$ *mm* diameter are electroplated in a shop. Thickness of the plating is $30^{\pm 2.0}$ *micron*. Neglecting gage tolerances, the size of the GO gage in *mm* to inspect the plated components is

(A) 25.042 (B) 25.052 (C) 25.074 (D) 25.084

Q.38 During the electrochemical machining (ECM) of iron (atomic weight = 56, valency = 2) at current of 1000 *A* with 90% current efficiency, the material removal rate was observed to be 0.26 *gm/s*. If Titanium (atomic weight = 48, valency = 3) is machined by the ECM process at the current of 2000 *A* with 90% current efficiency, the expected material removal rate in *gm/s* will be

(A) 0.11 (B) 0.23 (C) 0.30 (D) 0.52

Q.39 A single degree of freedom system having mass 1 *kg* and stiffness 10 *kN/m* initially at rest is subjected to an impulse force of magnitude 5 *kN* for 10^{-4} *seconds*. The amplitude in *mm* of the resulting free vibration is

(A) 0.5 (B) 1.0 (C) 5.0 (D) 10.0

Q.40 A bar is subjected to fluctuating tensile load from 20 *kN* to 100 *kN*. The material has yield strength of 240 *MPa* and endurance limit in reversed bending is 160 *MPa*. According to the Soderberg principle, the area of cross-section in mm^2 of the bar for a factor of safety of 2 is

(A) 400 (B) 600 (C) 750 (D) 1000

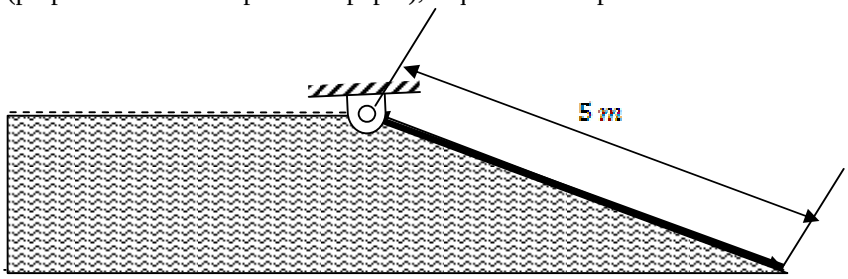
Q.41 A simply supported beam of length *L* is subjected to a varying distributed load $\sin(3\pi x/L)$ Nm^{-1}, where the distance *x* is measured from the left support. The magnitude of the vertical reaction force in *N* at the left support is

(A) zero (B) $L/3\pi$ (C) L/π (D) $2L/\pi$

Q.42 Two large diffuse gray parallel plates, separated by a small distance, have surface temperatures of 400 *K* and 300 *K*. If the emissivities of the surfaces are 0.8 and the Stefan-Boltzmann constant is $5.67 \times 10^{-8} W/m^2K^4$, the net radiation heat exchange rate in kW/m^2 between the two plates is

(A) 0.66 (B) 0.79 (C) 0.99 (D) 3.96

Q.43 A hinged gate of length 5 *m*, inclined at 30° with the horizontal and with water mass on its left, is shown in the figure below. Density of water is 1000 kg/m^3. The minimum mass of the gate in *kg* per unit width (perpendicular to the plane of paper), required to keep it closed is



(A) 5000 (B) 6600 (C) 7546 (D) 9623

Q.44 The pressure, temperature and velocity of air flowing in a pipe are 5 *bar*, 500 *K* and 50 *m/s*, respectively. The specific heats of air at constant pressure and at constant volume are 1.005 *kJ/kgK* and 0.718 *kJ/kgK*, respectively. Neglect potential energy. If the pressure and temperature of the surroundings are 1 *bar* and 300 *K*, respectively, the available energy in *kJ/kg* of the air stream is

(A) 170 (B) 187 (C) 191 (D) 213

Q.45 The probability that a student knows the correct answer to a multiple choice question is $\frac{2}{3}$. If the student does not know the answer, then the student guesses the answer. The probability of the guessed answer being correct is $\frac{1}{4}$. Given that the student has answered the question correctly, the conditional probability that the student knows the correct answer is

(A) $\frac{2}{3}$ (B) $\frac{3}{4}$ (C) $\frac{5}{6}$ (D) $\frac{8}{9}$

Q.46 The solution to the differential equation $\frac{d^2u}{dx^2} - k\frac{du}{dx} = 0$ where k is a constant, subjected to the boundary conditions $u(0) = 0$ and $u(L) = U$, is

(A) $u = U\frac{x}{L}$ (B) $u = U\left(\frac{1-e^{kx}}{1-e^{kL}}\right)$

(C) $u = U\left(\frac{1-e^{-kx}}{1-e^{-kL}}\right)$ (D) $u = U\left(\frac{1+e^{kx}}{1+e^{kL}}\right)$

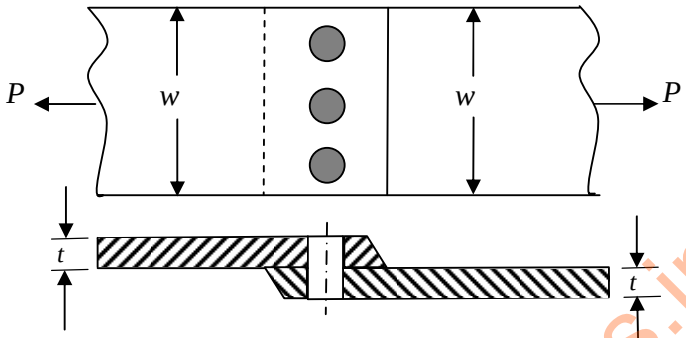
Q.47 The value of the definite integral $\int_1^e \sqrt{x}\,\ln(x)\,dx$ is

(A) $\frac{4}{9}\sqrt{e^3}+\frac{2}{9}$ (B) $\frac{2}{9}\sqrt{e^3}-\frac{4}{9}$ (C) $\frac{2}{9}\sqrt{e^3}+\frac{4}{9}$ (D) $\frac{4}{9}\sqrt{e^3}-\frac{2}{9}$

Common Data Questions

Common Data for Questions 48 and 49:

A single riveted lap joint of two similar plates as shown in the figure below has the following geometrical and material details.



width of the plate $w = 200\ mm$, thickness of the plate $t = 5\ mm$, number of rivets $n = 3$, diameter of the rivet $d_r = 10\ mm$, diameter of the rivet hole $d_h = 11\ mm$, allowable tensile stress of the plate $\sigma_p = 200\ MPa$, allowable shear stress of the rivet $\sigma_s = 100\ MPa$ and allowable bearing stress of the rivet $\sigma_c = 150\ MPa$.

Q.48 If the rivets are to be designed to avoid crushing failure, the maximum permissible load P in kN is

(A) 7.50 (B) 15.00 (C) 22.50 (D) 30.00

Q.49 If the plates are to be designed to avoid tearing failure, the maximum permissible load P in kN is

(A) 83 (B) 125 (C) 167 (D) 501

Common Data for Questions 50 and 51:

Water (specific heat, $c_p = 4.18\ kJ/kgK$) enters a pipe at a rate of 0.01 kg/s and a temperature of 20°C. The pipe, of diameter 50 mm and length 3 m, is subjected to a wall heat flux q''_W in W/m^2:

Q.50 If $q''_W = 2500x$, where x is in m and in the direction of flow ($x = 0$ at the inlet), the bulk mean temperature of the water leaving the pipe in °C is

(A) 42 (B) 62 (C) 74 (D) 104

Q.51 If $q''_W = 5000$ and the convection heat transfer coefficient at the pipe outlet is 1000 W/m^2K, the temperature in °C at the inner surface of the pipe at the outlet is

(A) 71 (B) 76 (C) 79 (D) 81

Linked Answer Questions

Statement for Linked Answer Questions 52 and 53:

In orthogonal turning of a bar of 100 *mm* diameter with a feed of 0.25 *mm/rev*, depth of cut of 4 *mm* and cutting velocity of 90 *m/min*, it is observed that the main (tangential) cutting force is perpendicular to the friction force acting at the chip-tool interface. The main (tangential) cutting force is 1500 *N*.

Q.52 The orthogonal rake angle of the cutting tool in *degree* is

(A) zero (B) 3.58 (C) 5 (D) 7.16

Q.53 The normal force acting at the chip-tool interface in N is

(A) 1000 (B) 1500 (C) 2000 (D) 2500

Statement for Linked Answer Questions 54 and 55:

In a simple Brayton cycle, the pressure ratio is 8 and temperatures at the entrance of compressor and turbine are 300 *K* and 1400 *K*, respectively. Both compressor and gas turbine have isentropic efficiencies equal to 0.8. For the gas, assume a constant value of c_p (specific heat at constant pressure) equal to 1 *kJ/kgK* and ratio of specific heats as 1.4. Neglect changes in kinetic and potential energies.

Q.54 The power required by the compressor in *kW/kg* of gas flow rate is

(A) 194.7 (B) 243.4 (C) 304.3 (D) 378.5

Q.55 The thermal efficiency of the cycle in percentage (%) is

(A) 24.8 (B) 38.6 (C) 44.8 (D) 53.1

General Aptitude (GA) Questions

Q.56 to Q.60 carry one mark each.

Q.56 Complete the sentence:
Universalism is to particularism as diffuseness is to _____.

(A) specificity (B) neutrality (C) generality (D) adaptation

Q.57 Were you a bird, you _____ in the sky.

(A) would fly (B) shall fly (C) should fly (D) shall have flown

Q.58 Which one of the following options is the closest in meaning to the word given below?

Nadir

(A) Highest (B) Lowest (C) Medium (D) Integration

Q.59 Choose the grammatically **INCORRECT** sentence:

(A) He is of Asian origin.
(B) They belonged to Africa.
(C) She is an European.
(D) They migrated from India to Australia.

Q.60 What will be the maximum sum of 44, 42, 40, ... ?

(A) 502 (B) 504 (C) 506 (D) 500

Q. 61 to Q. 65 carry two marks each.

Q.61 Out of all the 2-digit integers between 1 and 100, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?

(A) 13/90 (B) 12/90 (C) 78/90 (D) 77/90

Q.62 A tourist covers half of his journey by train at 60 km/h, half of the remainder by bus at 30 km/h and the rest by cycle at 10 km/h. The average speed of the tourist in km/h during his entire journey is

(A) 36 (B) 30 (C) 24 (D) 18

Q.63 Find the sum of the expression

$$\frac{1}{\sqrt{1}+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+.....+\frac{1}{\sqrt{80}+\sqrt{81}}$$

(A) 7 (B) 8 (C) 9 (D) 10

Q.64 The current erection cost of a structure is *Rs*. 13,200. If the labour wages per day increase by 1/5 of the current wages and the working hours decrease by 1/24 of the current period, then the new cost of erection in *Rs*. is

(A) 16,500 (B) 15,180 (C) 11,000 (D) 10,120

Q.65 After several defeats in wars, Robert Bruce went in exile and wanted to commit suicide. Just before committing suicide, he came across a spider attempting tirelessly to have its net. Time and again, the spider failed but that did not deter it to refrain from making attempts. Such attempts by the spider made Bruce curious. Thus, Bruce started observing the near-impossible goal of the spider to have the net. Ultimately, the spider succeeded in having its net despite several failures. Such act of the spider encouraged Bruce not to commit suicide. And then, Bruce went back again and won many a battle, and the rest is history.

Which of the following assertions is best supported by the above information?

(A) Failure is the pillar of success.
(B) Honesty is the best policy.
(C) Life begins and ends with adventures.
(D) No adversity justifies giving up hope.

END OF THE QUESTION PAPER