

6E3049

Roll No. _____

Total No of Pages: 4**6E3049****B. Tech. VI Sem. (Main & Back) Exam. May/June-2014****Mechanical Engineering****6ME1 Design of Machine Elements-II****(Common for ME and P&I)****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 24****Instructions to Candidates:-**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

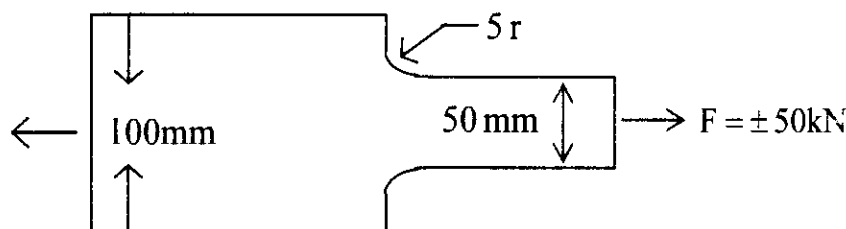
1. Design Data Handbook

2. _____

UNIT-I

Q.1 (a) Draw and describe Goodman and Soderberg diagram. [6]

(b) A component machined from a plate of thickness 't' has ultimate strength 630N/mm^2 . It is subjected to completely reversed axial force of 50kN . The expected reliability is 90% and factor of safety is 2. Determine the plate thickness for infinite life, if the notch sensitivity factor is 0.8. [10]

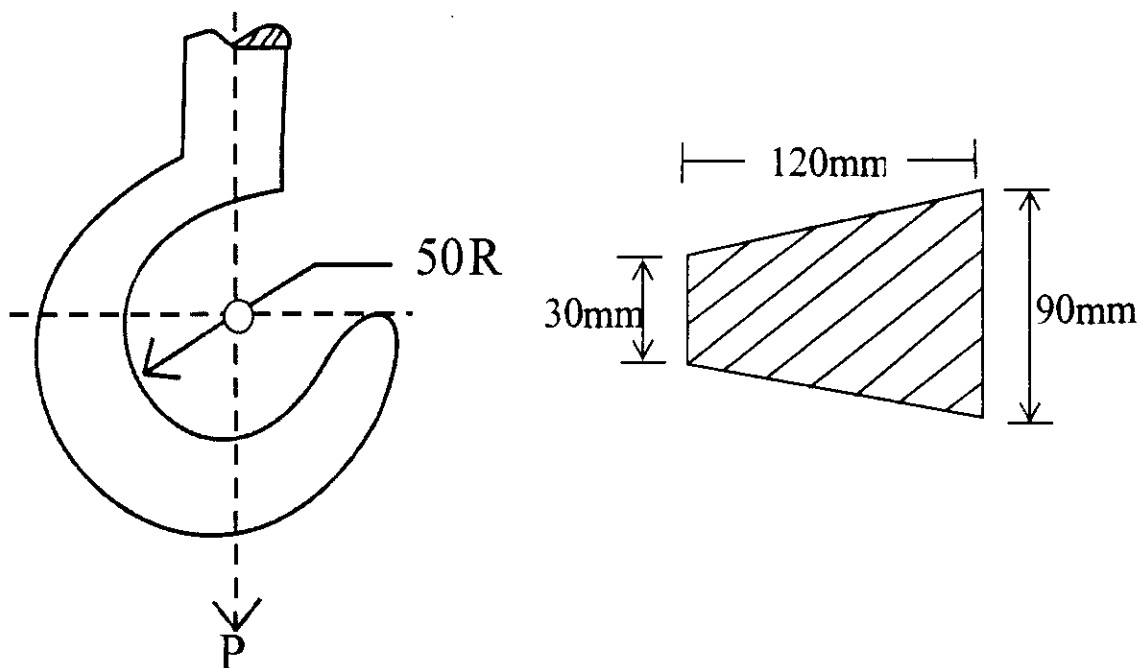


OR

- Q.1 (a) What is stress concentration? Describe methods of reduction in stress concentration. [8]
- (b) A solid circular shaft made of steel with $\sigma_{ut} = 620\text{N/mm}^2$ and $\sigma_{yp} = 380\text{N/mm}^2$ is subjected to an alternating torsional moment which varies from -200 Nm to $+400\text{ Nm}$. The shaft is ground and the expected reliability is 90%. Neglecting stress concentration calculate shaft diameter for infinite life. The factor of safety is 2. [8]

UNIT-II

- Q.2 (a) Compare stress distribution in simple beam and curved beam. [6]
- (b) A crane hook having approximate trapezoidal section is shown in figure. It is made of steel having $\sigma_{yp} = 380\text{N/mm}^2$ and factor of safety is 3.5. Determine load carrying capacity of hook. [10]

OR

- Q.2 Design a simple screw jack for lifting a load of 10kN and having a maximum lift of 250mm. The yield point strength of screw material is 240N/mm^2 for tension and compression and 150N/mm^2 for shear. The material for nut is phosphor bronze and yield point strength is 130N/mm^2 in tension and compression and 100N/mm^2 in shear.

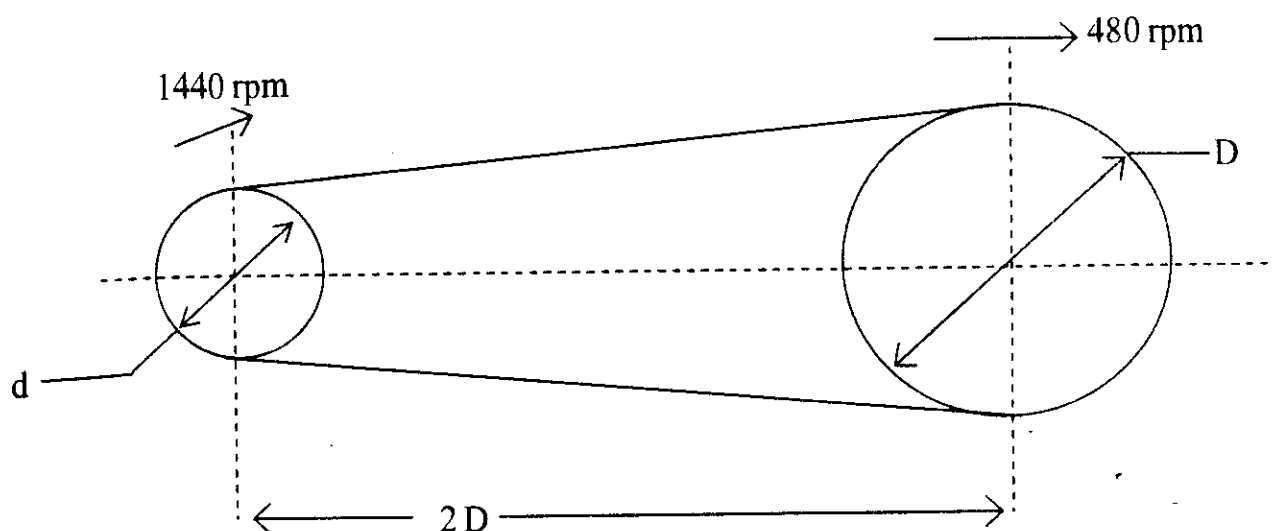
The maximum bearing pressure on threads is 18N/mm^2 . Coefficient of friction for threads and collar is 0.13. [16]

UNIT-III

- Q.3 (a) What do you understand by Wahl's factor? State its importance in design of helical springs. [6]
- (b) A helical spring of round wire supports a static load of 1000N . The inside diameter of spring coil must not be less than 50mm . The spring is to deflect by 15mm . The permissible shear stress of spring material is 400N/mm^2 . Calculate wire size, mean coil diameter, no. of effective turns, spring index, solid length, free length and spring stiffness. Assume plain ends of spring. [10]

OR

- Q.3 (a) Explain the chordal action of a chain drive. [6]
- (b) The layout of the leather belt drive transmitting 15 kW is shown in figure. The belt should operate at a velocity of 20 m/sec approximately and stress in belt should not exceed 2.25 N/mm^2 . Density of leather is 0.95 gm/cc and coefficient of friction is 0.35. The thickness of belt is 5mm . Calculate-
- The diameters of pulleys.
 - The length and width of belt.
 - The belt tension.
- [10]



UNIT-IV

- Q.4 (a) Discuss materials used for gears. [6]
- (b) Determine module, face width, number of teeth and diameter of a pair of 20° involute full depth spur gear to transmit 112.5 kW from a pinion running at 750rpm to a gear running at 140rpm. The service is intermittent with light shocks. [10]

OR

- Q.4 (a) Why involute profile is employed more commonly as compared to cycloidal profile. [6]
- (b) A pair of parallel helical gears consists of an 18 teeth pinion meshing with a 45 teeth gear. A 7.5 kW power at 2000 rpm is supplied to pinion through its shaft. The normal module is 6mm while normal pressure angle is 20° . The helix angle is 23° . Determine the tangential, radial and axial components of the resultant tooth force. [10]

UNIT-V

- Q.5 (a) Discuss theory of Hydrodynamic lubrication. [6]
- (b) A journal bearing is proposed for a centrifugal pump. The diameter of the journal is 0.15m and load on it is 40 kN and its speed is 900rpm. Complete the design calculation for the bearing. [10]

OR

- Q.5 (a) Mention advantages and disadvantages of rolling contact bearings. [6]
- (b) A ball bearing supporting a gear shaft is subjected to a radial load of 1600N and a thrust load of 550N. Select proper bearing for a speed of 150 rpm. Life expectancy is 50×10^3 cycles. [10]

6E3050

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Total No of Pages: 4**6E3050****B. Tech. VI Sem. (Main & Back) Exam. May/June-2014****Mechanical Engineering****6ME2 I.C. Engines & Diesel Power Plant****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 24*****Instructions to Candidates:-***

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. _____

2. _____

UNIT-I

- Q.1 (a) Discuss various elements in Energy Balance of a typical diesel engine. [5]
- (b) Give a historical view of different emission standards applicable in India. [6]
- (c) Describe with the help of a sketch any one method for measurement of air consumption of a single cylinder gasoline engine. [5]

OR

- (a) Discuss first law analyses for an I.C. Engine. [4]
- (b) Calculate (i) BHP (ii) Torque (iii) bsfc and (iv) volumetric efficiency for the six cylinder four stroke engine for which BHP is measured by a water brake

(law $WN/20000$ where W is in Newton and speed N is in rpm). The air consumption is measured by an orifice system. [12]

Bore = 100mm

Stroke = 120mm

Brake load = 560N

Orifice diameter = 30mm

C_d of orifice = 0.6

Pressure drop across orifice = 14.5 Cms of Hg

Fuel density = 831 Kg/m³

Time taken to consume 100 cc fuel = 20 sec

Ambient pressure = 1 bar

Ambient Temperature = 27°C

UNIT-II

Q.2 (a) Discuss the effect of various engine design and operating variables on different combustion parameters for a diesel engine. [8]

(b) Define engine knock. How it differs from detonation? [2+6]

Discuss in detail various factors affecting knocking in an S.I. Engine

OR

(a) Discuss in detail types of abnormal combustion in SI and CI engines. Also suggest methods for controlling these abnormal combustions in an actual engine. [8]

(b) Compare important characteristics of methanol and ethanol fuels with gasoline fuel and explain their effect on important engine performance parameters. [8]

UNIT-III

- Q.3 (a) Explain in detail working of a common rail fuel injection system for a diesel engine and enumerate main advantages of CRDI over a conventional fuel injection system. [8]
- (b) Discuss the effect of air-fuel ratio on various performance parameters of diesel and gasoline engines. [8]

OR

- (a) Discuss in detail any one type of Electronic Ignition system for a SI engine and explain its benefits over conventional ignition system. [7]
- (b) Write short notes on –
- (i) Firing order of a multi-cylinder engine [3]
 - (ii) Aircraft carburetor [3]
 - (iii) Spark advance and its effects [3]

UNIT-IV

- Q.4 (a) Discuss different lubrication regimes and explain which of them is applicable for bearings, piston rings and tappets of an engine. [6]
- (b) Find IHP, BHP and draw neat balance sheet for a single cylinder four stroke engine with following data: [10]

Bore = 20cm	Stroke = 40cm	mep = 6bar
Torque = 407N _m	Speed = 250rpm	Fuel consumption = 4kg/h
C.V of fuel = 43MJ/kg	Air used/kg of fuel = 30kg	
Cooling water flow	=	4.5kg/min
Rise in cooling water temp	=	45°C
Exhaust gas temp	=	420°C
Room Temperature	=	20°C
Specific heat of exhaust gas	=	1 kJ / kgK
Specific heat of water	=	4.18 kJ / kgK

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OR

- (a) Explain in detail different ratings and classification of engine oils. [8]
- (b) Describe different methods of super charging CI and SI engines and explain their limiting factors. [8]

UNIT-V

Q.5 Explain working principles of - [4×4]

- (a) Variable compression ratio engine
- (b) Rotary combustion engine
- (c) Stratified charge engine
- (d) Free piston engine

OR

- (a) Explain how a dual fuel engine works? How combustion in a dual fuel engine is different from a conventional diesel engine. What modifications are needed to convert a conventional diesel engine to a dual fuel engine? [4×3]
 - (b) Explain how the speed of an engine generator is controlled. [4]
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6E3051

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Total No of Pages: **4****6E3051**

**B. Tech. VI Sem. (Main & Back) Exam., May-2014 ,
Mechanical Engineering
6ME3 Manufacturing Science & Technology**

Time: 3 Hours**Maximum Marks: 80****Min. Passing Marks: 24****Instructions to Candidates:-**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. _____

2. _____

UNIT-I

Q.1. (a) What are the differences between jigs and fixtures? Write the different design considerations used for designing jigs and fixtures. [8]

(b) Explain various types of milling fixtures and jig bushes with their merits, demerits. [8]

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OR

Q.1. (a) What do you understand by the principle of locating and clamping devices?

What is the six points location principle? Explain.

[8]

(b) What do you understand by economics of jigs and fixtures? Explain various types of welding and assembly fixtures.

[8]

UNIT-II

Q.2. (a) How the electrons are generated in electron beam machining? What is the working principle of electron beam machining?

[8]

(b) What are the differences between conventional and unconventional machining methods? Explain abrasive jet machining.

[8]

OR

Q.2. (a) What is the working principle of plasma arc machining? What are its merits and demerits?

[8]

(b) Explain electro discharge machining with its advantages, disadvantages and applications.

[8]

UNIT-III

Q.3. (a) Explain the various elements of surface roughness. Discuss various methods of evaluating the surface roughness in brief.

[8]

- (b) Explain various terms used for measurement of gear tooth profile. Explain the method for measuring the gear tooth thickness. [8]

OR

- Q.3. (a) List various types of comparators. Explain the working principle of pneumatic comparator with its advantages and disadvantages. [8]

- (b) How the slope of an object can be measured with the help of sine bar and slip gauges? Explain with a neat sketch. [8]

UNIT-IV

- Q.4. (a) How a single point cutting tool is designated? What is the role of each cutting tool angle in cutting operation? [8]

- (b) What do you understand by tool life? Explain the term optimum value of tool angles for cutting of mild steel. [8]

OR

- Q.4. (a) Explain the various parts and cutting angles of a twist drill. How do these angles affect the cutting operation? [8]

- (b) Derive the force and power consumption relationship during milling operation. [8]

UNIT-V

Q.5. Write short notes on any **four** of the following:

[4x4=16]

- (a) Design of a lathe bed.
 - (b) Various lathe bed section and their utility
 - (c) Material and construction of lathe bed and guide ways
 - (d) Use of reinforcing stiffener in lathe bed
 - (e) Antifriction guide ways
 - (f) Design procedure of guide ways
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6E3052

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Total No of Pages: 4**6E3052****B. Tech. VI Sem. (Main & Back) Exam., May-2014'****Mechanical Engineering****6ME4 Noise, Vibration and Harshness****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 24****Instructions to Candidates:-**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. _____ NIL _____

2. _____ NIL _____

UNIT-I

Q.1 (a) A machine operator in a factory is surrounded by five machines. The machines produce sound pressure levels of 95 dB, 87 dB, 90 dB, 93 dB and 88 dB respectively at the operation position, when there is no back ground noise. When the machines are 'off', the SPL at his position is 88 dB. Determine the total sound pressure level at his position due to both the machines and the ambient sound. [8]

(b) Explain the following terms - [8]

(i) Sound spectra

(ii) Octave band analysis

OR

Q.1 What are the major non-auditory effects of noise on people? Provide the ambient emission noise standards in India. What strategy can be used for noise control at the source? [16]

UNIT-II

Q.2 (a) A body of mass 10kg is hung on two helical springs in series. One spring is elongated 2cm by a force of 6N; the other spring requires a force of 4N for the same elongation. Calculate the natural frequency of vibration. [8]

(b) A steel shaft 6cm diameter and 50cm long fixed at one end carries a flywheel of mass 100kg and radius of gyration of 30cm at its free end. Find the frequency of free longitudinal and transverse vibrations. Take $E = (2 \times 10^{11}) \text{ N/m}^2$ & $G = 8.3 \times 10^{10} \text{ N/m}^2$ [8]

OR

Q.2 (a) A mass of 20kg is suspended from a spring of stiffness 10,000 N/m. The vertical motion of the mass is subjected to Coulomb friction of magnitude 50N. If the spring is initially displaced downwards by 5cm from its static equilibrium position, determine -

(i) the number of half cycles elapsed before system comes to rest.

(ii) the time taken for the system to come to rest

(iii) the final extension of spring [8]

(b) A vibrating system in a vehicle is to be designed with the following parameters -

$K = 100 \text{ N/m}$; $C = 2 \text{ N sec /m}$; $m = 1 \text{ kg}$, calculate:

- (i) the decrease of amplitude from its starting value after 3 complete oscillations.
- (ii) the frequency of damped oscillations. [8]

UNIT-III

- Q.3 (a) A vertical single stage air compressor having a mass of 600 kg is mounted on springs having stiffness of 2×10^5 N/m and damping ratio is 0.2. The rotating parts are completely balanced and the equivalent reciprocating parts weigh 20kg. The stroke is 0.2m. Determine the dynamic amplitude of vertical motion and the phase difference between the motion and excitation force if the compressor is operated at 200 rpm. [8]
- (b) A seismic instrument with a natural frequency of 8 Hz is used to measure the vibration of a machine operating at 180 rpm. The relative displacement of the seismic mass as read from the instrument is 0.05 mm. Determine the amplitude of vibration of the machine. Neglect damping. [8]

OR

- Q.3 Explain in detail the principle and working of following vibration measuring instruments -
- (a) Seismometer
- (b) Accelerometer
- Also derive the necessary governing formulae for each. [16]

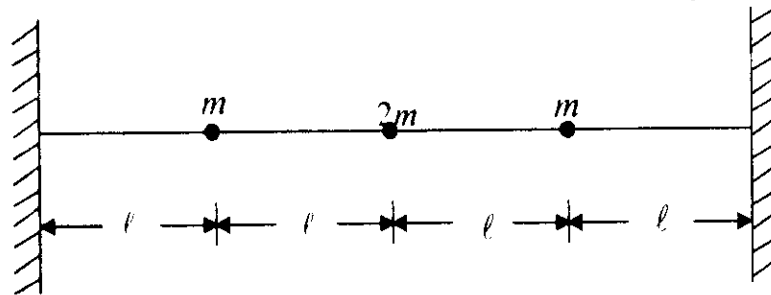
UNIT-IV

- Q.4 (a) Explain the principle and working of centrifugal pendulum absorber. [8]
- (b) A gas engine has a mass of 30kg and runs at a constant speed of 3600 rpm. It vibrates with large amplitude of vibration at operating speed. Design a dynamic vibration absorber to be coupled to the engine so that the nearest resonant

frequency of the combined system should be at least 25% away from operating speed. [8]

OR

Q.4 For a taut string having tension T and three concentrated masses as shown in figure, use the method of influence numbers to find the three natural frequencies. [16]

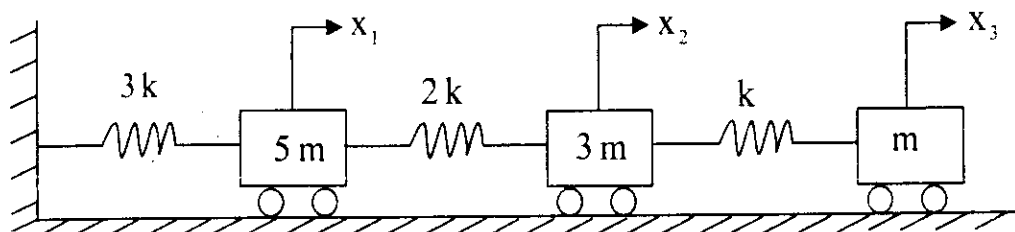


UNIT-V

Q.5 Derive the governing equation for transverse vibrations of a tightly stretched elastic string fixed at both ends. Using method of separation of variables, obtain the frequency equation and mode shapes for the same. Plot the first four modes of such string. [16]

OR

Q.5 Using Stodola's method find the lowest natural frequency of the following system. [16]



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Total No of Pages: 4**6E3053**

B. Tech. VI Sem. (Main & Back) Exam., May-2014
Mechanical Engineering
6ME5 Hydraulic Machines & Hydroelectric Power Plant

Time: 3 Hours**Maximum Marks: 80****Min. Passing Marks: 24****Instructions to Candidates:-**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.

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Use of following supporting material is permitted during examination.

1. _____

2. _____

UNIT-I

- Q.1 (a) Derive Euler's momentum equation applicable to turbo – machine and also give its physical significances. [8]
- (b) A, jet of water moving at 12m/sec impinges on concave vane shaped to deflect the jet through 120° when stationary. If the vane is moving at 5m/sec, find the angle of the jet so that there is no shock at inlet. What is the absolute velocity of the jet at exit in magnitude and direction? Assume vane is smooth. [8]

OR

- Q.1 (a) What is Specific Speed of turbine? Derive an expression for Non dimensional Specific Speed of turbine. [8]

- (b) The following data relates to a turbine operating at 200 rpm with full gate opening:-

Head, H (m)	7.5	6.78	6.18	5.67	5.22	4.8
Power, P (KW)	266	231	201	176	153	131
Overall efficiency η_0 %	81.1	83.1	84.4	84.8	85	84.1

Draw the graphs of unit Power (P_u) and overall efficiency (η_0) against unit speed (N_u) and find how much water is required per second for getting the maximum output under a head of 6.5m. [8]

UNIT-II

- Q.2 (a) How are the hydraulic turbines classified? Explain. [8]
- (b) Prove that the maximum efficiency of Delton wheel is given by [8]

$$\eta_{\max} = \frac{1 + K \cos \phi}{2}$$

OR

- Q.2 (a) What are the various efficiencies involved in pelton wheel performance Analysis? Explain and also state and draw the sketches of different types of pelton wheel buckets. [8]
- (b) A pelton wheel turbine develops 10 MW under a head of 500 m. taking the overall efficiency of turbine as 90%, jet ratio as 12, Speed ratio as 0.45. Find the nozzle diameter, wheel diameter and the speed. [8]

UNIT-III

- Q.3 (a) An inward flow reaction turbine discharges radially and the velocity of flow is constant and equal to velocity of discharge from the turbine. Show that the hydraulic efficiency can be expressed by -

$$\eta_h = \frac{1}{\frac{\tan^2 \alpha}{1 + \frac{2}{\left[1 - \frac{\tan \alpha}{\tan \theta}\right]}}}$$

If vanes are radially at inlet, also show that

$$\eta_h = \frac{2}{2 + \tan^2 \alpha} \quad [8]$$

- (b) A Kaplan turbine develops 10 MW under a net available head of 18m. Assuming a speed ratio of 2, flow ratio 0.7, hydraulic efficiency 93% and overall efficiency 82% and the diameter of boss equal to one third of runner diameter, determine (i) dia of runner and its speed (ii) Inlet blade angle at the edge of the blade. [8]

OR

- Q.3 (a) Explain the theory and function of a draft tube. Derive an expression for draft tube. [8]
- (b) Prove that cavitation of reaction turbine is -

[8]

$$\sigma_c = \frac{H_a - H_{min.} - H_s}{H}$$

UNIT-IV

- Q.4 (a) Working from the first principles show that the work saved, against friction in delivery pipe of a double acting reciprocating pump, by fitting an air vessel, is 39.2% . [8]
- (b) A double acting reciprocating pump, running at 40 rpm is discharging 16.2 liters/sec. The diameter of the piston is 200 mm and stroke length 400 mm. The suction and delivery heads are 6m and 24m respectively. Find the percentage of slip and power required to drive the pump. Take mechanical efficiency as 80%. [8]

OR

Q.4 Describe the following -

- (i) Hydraulic Ram
- (ii) Hydraulic torque converter
- (iii) Hydraulic Coupling
- (iv) Air lift pump.

[4x4=16]

UNIT-V

- Q.5 (a) State and explain the essential components of Hydro Electric Power Station (HEPS) with the help of neat sketches. [8]
- (b) What are the factors considered for site selection of HEPS? Explain. [8]

OR

- Q.5 (a) What is Surge tank? Explain the various types of surge tanks used in HEPS with neat sketches. [8]
- (b) Explain the development of Hydro power in India as well as in Rajasthan. Also give the present status of hydro power in India and Rajasthan. [8]

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Total No of Pages: 7**6E3054**

**B. Tech. VI Sem. (Main & Back) Exam., May-2014 ,
Mechanical Engineering
6ME6 Numerical Methods and Applied Statistics**

Time: 3 Hours**Maximum Marks: 80****Min. Passing Marks: 24****Instructions to Candidates:-**

*Attempt any **five** questions, selecting **one** question from **each** unit. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.*

Units of quantities used/ calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. _____ Nil _____

2. _____ Nil _____

UNIT-I

Q.1. (a) Find a real root of the equation $x^3 + x^2 - 1 = 0$ using bisection method. [8]

(b) Apply Graeffe's root squaring method to find all the roots of the equation

$x^3 - 2x^2 - 5x + 6 = 0$ (squaring three times). [8]

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OR

Q.1. (a) A real root of the equation $f(x) = x^3 - 5x + 1 = 0$ lies in the interval $(0, 1)$. Perform four iterations of the secant method. [8]

(b) Find by Newton- Raphson method, the real root of the equation -

$$3x = \cos x + 1 \quad [8]$$

UNIT-II

Q.2. (a) Find the inverse of the matrix -

$$A = \begin{bmatrix} 2 & 1 & 1 & -2 \\ 4 & 0 & 2 & 1 \\ 3 & 2 & 2 & 0 \\ 1 & 3 & 2 & -1 \end{bmatrix}$$

using partition method.

(b) Use Lagrange's interpolation formula to find the value of y when $x=5$, if the following values of x and y are given -

$x \rightarrow$	1	2	3	4	7
$y \rightarrow$	2	4	8	16	128

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OR

- (a) By using Newton's divided difference formula find the value of $f(8)$ from following - [8]

$$x \rightarrow 4 \quad 5 \quad 7 \quad 10 \quad 11 \quad 13$$

$$y \rightarrow 48 \quad 100 \quad 294 \quad 900 \quad 1210 \quad 2028$$

- (b) Apply Bessel's formula to obtain Y_{25} ,

given $Y_{20} = 2854, \quad Y_{24} = 3162,$

$$Y_{28} = 3544, \quad Y_{32} = 3992$$

[8]

UNIT-III

Q.3. (a) Evaluate the integral $\int_{0.5}^{0.7} \sqrt{x} e^{-x} dx$

by using Simpson's $\frac{1}{3}$ rule.

[8]

- (b) Apply Runge- kutta method to find the solution of differential equation -

$$\frac{dy}{dx} = 3x + \frac{y}{2}$$

with $y_0 = 1, \quad x_0 = 0, \quad \text{at } x = 0.1$

[8]

OR

- (a) Find $\frac{dy}{dx}$ at $x = 1.1$ from following [8]

$x \rightarrow$ 1 1.2 1.4 1.6 1.8 2.0

$y \rightarrow$ 0 0.128 0.544 1.296 2.432 4

- (b) Use Picard's method to approximate the value of y when $x = 0.1$, given that $y = 1$ when $x = 0$, and $\frac{dy}{dx} = 3x + y^2$ [solve upto second approximation]. [8]

UNIT-IV

Q.4. (a) If x has the p.d.f. $f(x) = \begin{cases} \frac{x+1}{2}, & -1 \leq x \leq 1 \\ 0, & \text{otherwise} \end{cases}$

find μ_1' , μ_2' , μ_3' , and μ_4' .

[8]

- (b) If the sample of 100 bulbs of brand "A" gave a mean lifetime of 1200 hours with a S.D. of 70 hours, while another sample of 120 bulbs of brand "B" gave a mean lifetime of 1150 hours with a S.D. of 85 hours. Can we conclude that brand "A" bulbs are superior to brand "B" bulbs. The level of significance at 5% is 1.96.

OR

- (a) If the probability of defective items from a manufacturing unit is 2% in a box of 200 items, find the probability that -

- (i) exactly 4 items are defective
(ii) more than 3 items are defective,

given that $e^{-4} = 0.0183$.

[8]

- (b) In a town A, 20% of a random sample of 900 school boys had a slight physical defect. In another town B, 18.5% of random sample of 1600 school boys had the same defect. Is the difference between the proportions significant? The level of significance at 5% is 1.96.

[8]

UNIT-V

- Q.5. (a) Obtain the rank correlation coefficient for the following data:

x→	68	64	75	50	64	80	75	40	55	64
y→	62	58	68	45	81	60	68	48	50	70

[8]

- (b) The marks obtained by a group of 9 regular course students and another group of 11 part time students in a test are given below:

Regular → 56, 62, 63, 54, 60, 51, 67, 69, 58

Part time → 62, 70, 71, 62, 60, 56, 75, 64, 72, 68, 66

Examine whether the marks obtained by regular and part time students differ significantly at 5% level. Give that $t_{0.05} = 2.10$ for degree of freedom = 18. [8]

OR

- (a) Find the most likely price in Bombay Corresponding to the price of Rs. 70 at Calcutta from the following:

	Calcutta	Bombay
	↓	↓
Average Price →	65	67
S. D. →	2.5	3.5

Correlation coefficient is 0.8.

[8]

- (b) The following table gives the two wheeler accidents occurred during one week:

Days→	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Accidents→	14	16	8	12	11	9	14

Can you say the accidents are uniformly distributed over the week?

Given that $\chi_{0.05} = 12.592$ for degree of freedom = 6.

[8]
