Register Number.....

B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Fifth Semester

MECHANICAL ENGINEERING

U07ME504: Hydraulics and Pneumatics

ours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

amic viscosity

e B. Stoke C. Centi-stoke D. Milli-stoke .

pheric pressure is equal to

1 bar B. 10 bar C. 10.1 bar D. 9.81 bar

ature meter is used in an inclined position, it will show

me reading B. More reading C. Less reading D. Depends on viscosity of fluid

motor speed is 1450 rpm and Mechanical output power is 10KW. The torque is

5.9 N.M B. 6.5 N.M C. 72 N.M D. 7.2 N.M

wing in a 50 mm diameter pipe at a velocity of 5 m/s. The Reynolds number is

00 B. 400 C. 250 D. 450

imum sound level that a person may be exposed to during an 8 hr period in the work

the Occupational safety and health administration

B B. 900 dB C. 10 dB D. 800 dB

vitation can be eliminated by

ping suction line velocities below 1.2 m/s

ping pump inlet lines as short as possible

imizing the number of fittings in the inlet line

of the above

tric efficiency of a hydraulic motor is

oretical flow rate motor should consume/Actual flow rate consumed by motor

ual torque delivered by motor/Torque motor should theoretically deliver

ual flow rate consumed by motor/Theoretical flow rate motor should consume

eoretical flow rate motor should consume / Actual flow rate consumed by motor

9. Mechanical efficiency of a hydraulic motor is

A. Theoretical flow rate motor should consume/Actual flow rate consumed by

B. Actual torque delivered by motor/Torque motor should theoretically deliver

C. Actual flow rate consumed by motor/Theoretical flow rate motor should con

D. Theoretical flow rate motor should consume / Actual flow rate consumed by

10. At dew point, air relative humidity is

A. 90 % B. 95 % C. 100 % D. 98%

PART B (10 x 2 = 20 Marks)

11. Define fluid power.
12. List four primary functions of a hydraulic fluid.
13. What is meant by the term bulk modulus?
14. What is a cylinder cushion? What is its purpose?
15. What is a check valve? What does it accomplish?
16. What is an intensifier?
17. What is a multistage compressor?
18. What is meant by shuttle valve?
19. What is meant by limit switches?
20. What is meant by tracking error?

PART C (5 x 14 = 70 Marks)

21 a. What are the desirable properties of hydraulic fluids? Discuss any six of them in

(OR)

b. Write short notes on the following

i) Laminar and turbulent flow

ii) Losses in valves and fittings

iii)Darcy's equation

22 a. Explain the construction and working of an external gear pump and vane pump.

(OR)

b. Explain the working of telescopic and tandem cylinder.

23 a. Give a detailed procedure for the design of hydraulic circuits with a typical Exam

(OR)

cuss the following applications of an accumulator with circuits

i) Accumulator as an emergency power source (7)

ii) Accumulator as a hydraulic shock absorber (7)

Explain the functions of an air filter (7)

Explain commonly used 3 position 4 way direction control valve (7)

(OR)

sign the following applications using the principle of pneumatic system

i) Control of air motor ii) Deceleration of cylinder air cushion (7 + 7)

xplain electro hydraulic servo system with a block diagram.

(OR)

i) Discuss the major units of a PLC (7)

ii) Describe PLC applications in fluid power control (7)

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