Program: **Electronics Engineering**
Curriculum Scheme: Rev 2012
Examination: TE Semester VI
Course Code: EXC 602 and Course Name: Advanced Instrumentation Systems

Time: 2 hour Max. Marks: 80

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| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (20 ques X 2 marks = 40 marks)** |
|---|---|
| | |
| 1. | What is the role of Pneumatic actuators in fluid energy mechanism? |
| Option A: | Convert fluid energy to rotational pressure energy |
| Option B: | Convert fluid energy to rotational flow energy |
| Option C: | Convert fluid energy to rotational mechanical energy |
| Option D: | Convert fluid energy to rotational electrical energy |
| | |
| 2. | Which instrument is used to convert pressure into dial reading? |
| Option A: | Pneumatic motors |
| Option B: | Pneumatic gauges |
| Option C: | Air bearings |
| Option D: | Cylinders |
| | |
| 3. | Which of the following components is not a part of the conditioning unit? |
| Option A: | Shutoff valve |
| Option B: | Pressure gauge |
| Option C: | Flow control valve |
| Option D: | Pressure regulator |
| | |
| 4. | Which of the following statement is true? |
| Option A: | Pascal's principle applies to a confined incompressible fluid. |
| Option B: | Boyle’s law states that at a fixed temperature, the volume of gas is directly proportional to the pressure exerted by the gas. |
| Option C: | Charles law states that if pressure remains constant, the volume of a mass of gas is inversely proportional to its absolute temperature. |
| Option D: | Pascal's principle applies to a confined compressible fluid. |
| | |
| 5. | What is the role of Flapper and Nozzle System? |
| Option A: | converts mechanical movement into a pressure signal |
| Option B: | Control the direction of flow |
| Option C: | converts mechanical movement into an electrical signal |
| Option D: | Align the pressure |
| | |
| 6. | The fluid is used in hydraulic power systems? |
| Option A: | Air |
| Option B: | Heat |
| Option C: | Oil |
| Option D: | Steam |
| | |
| 7. | What is a hydraulic system? |

| | |
|---|---|
| Option A: | A system that uses a liquid under pressure to transmit a force to do work. |
| Option B: | A system that uses a gas under pressure to transmit a force to do work |
| Option C: | It uses heat to push an object. |
| Option D: | A system either use gas or oil to do work |
| | |
| 8. | The system used for lifting Heavy machinery work is accomplished by |
| Option A: | Reciprocating |
| Option B: | Pneumatic |
| Option C: | Hydraulic |
| Option D: | Hybrid |
| | |
| 9. | Which valve is used good for on /off control and eliminate pressure drop. |
| Option A: | Ball valve |
| Option B: | Butterfly valve |
| Option C: | Plug valve |
| Option D: | Knife valve |
| | |
| 10. | The other name of Check valve is ? |
| Option A: | Non-return valve |
| Option B: | Gate valve |
| Option C: | Butterfly Valve |
| Option D: | Diaphragm Valve |
| | |
| 11. | V to I convertors are with: |
| Option A: | Only Grounded Load |
| Option B: | Only Floating Load |
| Option C: | Either Floating Load or Grounded Load |
| Option D: | Neither Floating Load nor Grounded Load |
| | |
| 12. | In the _____control mode if the error is zero the output stays fixed at a value equal to what it was when the error went to zero |
| Option A: | PID |
| Option B: | Derivative |
| Option C: | Proportional |
| Option D: | Integral |
| | |
| 13. | Data loggers are powered by |
| Option A: | battery supply |
| Option B: | electric supply and computer |
| Option C: | solar energy |
| Option D: | battery supply and solar energy |
| | |
| 14. | Derivative controller provides _____output if error is constant in time |
| Option A: | Large |
| Option B: | Some |
| Option C: | No |
| Option D: | very large |
| | |
| 15. | For transmission of signal in Telemetry System the medium used is: |
| Option A: | Four Wire |

| | |
|---|---|
| Option B: | Two Wire |
| Option C: | Wireless |
| Option D: | Three Wire |
| | |
| 16. | _____type of recorder is done for data storage, data analysis, research and industrial control |
| Option A: | strip chart recorder |
| Option B: | X-Y recorder |
| Option C: | Magnetic recorder |
| Option D: | Galvanometer type recorder |
| | |
| 17. | The _____is a period of no response of the process to a change in the controlling variable |
| Option A: | Dead slot |
| Option B: | Dead time |
| Option C: | Dead zone |
| Option D: | Dead area |
| | |
| 18. | Generally the size of receiver depends on |
| Option A: | Blower |
| Option B: | delivery volume of compressor |
| Option C: | Filter |
| Option D: | Separator |
| | |
| 19. | The control valve positioner is used to: |
| Option A: | Change the characteristics of valve |
| Option B: | Increase the accuracy of transmitter |
| Option C: | Improve the precision |
| Option D: | Eliminate the cavitation in the value |
| | |
| 20. | _____comprises a set of rotating fan blades. |
| Option A: | Vane compressor |
| Option B: | axial compressor |
| Option C: | Rotary compressor |
| Option D: | Screw compressor |

| **Q2.** **(20 Marks Each)** | **Solve any Four (out of Six questions 5 marks each)** |
|---|---|
| A | Differentiate between Data acquisition and data logging |
| B | Explain basic requirements of control system. |
| C | Differentiate between hydraulic and Pneumatic System |
| D | Draw and explain 4/3 directional control valve |
| E | Explain Buoyancy transmitters and their applications. |
| F | Explain 2 wire and 3 wire transmitter. |

| **Q3.**<br>**(20 Marks Each)** | **Solve any Two Questions out of Three 10 marks each** |
|---|---|
| A | Draw and explain Pneumatic air supply System |
| B | Explain speed control circuit of hydraulic actuator. |
| C | What is the necessity of valve positioner, and explain its types. |