BE Semester-5 (mechanical) Question Bank

Subject Name: Metrology & Instrumentation

All questions carry equal marks(10 marks)

Q.1	Briefly discuss about errors involved in micrometer screw gauge and also explain how it can be reduced or eliminated?
Q.2	Working and magnification of "Sigma Comparator".
Q.3	Define the following terms: 1) Measurand,2) Measurement,3)Inspection,4)Calibration.
Q.4	Taylor's principle of gauge design.
Q.5	Define the following terms:1) Straightness, 2) Circularity, 3) Cylindricity, 4) Flatness.
Q.6	Explain the three-wire method to measure the "Effective diameter" of screw thread.
Q.7	Explain the procedure to measure the angle with help of sine-bar when 1) Job is bigger than sine bar , 2)Job is smaller than sine bar.
Q.8	Differentiate between "Line standard and End standard"
Q.9	Explain the procedure to measure the cylindricity of the engine cylinder with neat sketch.
Q.10	Briefly explain Parkinson's rolling gear tester.
Q.11	Describe construction, working principle and applications Vernier micrometer.
Q.12	Explain in brief with neat sketch the working of "Tool maker's microscope" .Give it's applications.
Q.13	Ideal Requirements of gauge material
Q.14	Classify the gauges.
Q.15	Explain the method to measure the chordal tooth thickness of given gear by gear tooth vernier caliper.
Q.16	Define the following terms related to surface roughness measurement. 1) CLA & RMS, 2) Lay, 3) 3^{rd} & 4^{th} order of geometrical irregularities.
Q.17	Define: 1) Threshold, 2) Sensitivity of manometer 3) Hysteresis , 4) Resolution , 5) Thermometry , 6) Pyrometry.
Q.18	Compare water and mercury as manomertic liquids.
Q.19	Piezo-electric transducer to measure force, pressure and vibration.
Q.20	Any one type of absorption type dynamometer.
Q.21	Explain the procedure to measure the speed of given shaft with help of flashing stroboscope.
Q.22	Clearly state the laws of thermocouple with neat sketch and state its industrial applications.
Q.23	Proving ring as force measuring device.
Q.24	Derive the equation to measure the flow rate with help of "Pitot-static tube".
Q.25	Define : 1) Primary Signal ,2) Secondary signal and 3) Tertiary signal----- with example.
Q.26	Explain briefly the generalized measurement system with neat sketch.
Q.27	Compare radiation pyrometer and optical pyrometer.
Q.28	Compare Ventury meter and orifice meter as a flow measuring device.
Q.29	A single column manometer is using mercury of specific gravity 13.6 as the manomertic fluid. To what height will the mercury rise in the narrow limb if a

	differential pressure of 60000 N/M^2 is applied ? The wide and narrow limb diameters are 80 mm and 7 mm respectively.
Q.30	Briefly explain with neat sketch the Ionization gauge for pressure measurement.
Q.31	Explain working principle of bimetallic thermometer with neat sketch. Also state its working range and applications.
Q.32	Explain the procedure to calibrate the bourdon tube pressure gauge with help of dead weight pressure gauge tester. What precautions we have to take during calibration to minimize errors?
Q.33	Explain with neat sketch the working of vernier caliper.
Q.34	Explain with neat sketch the working of combination set.
Q.35	Explain with neat sketch the working of LVDT.
Q.36	Explain with neat sketch the working of Profile Projector.
Q.37	Explain with neat sketch the working of telesurf surface roughness measuring instrument..
Q.38	Types of errors.
Q.39	Explain with neat sketch the working of bourdon tube pressure gauge.
Q.40	Explain in brief about friction dynamometer.