Marks scored:

KATHMANDU UNIVERSITY
End Semester Examination
March/April, 2017

Level : BE
Year : II

Course : MEEG 219
Semester : I

Exam. Roll No. :

Time: 30 mins.

F.M. : 20

Registration No.:

Date : APR 10 2017

SECTION "A"

[20 Q × 1 = 20 marks]

Choose the most appropriate answer and **mark [X]**.

1. The amount by which the actual size of a shaft is less than the actual size of mating hole in an assembly
[ ] clearance [ ] interference [ ] allowance [ ] none of the above

2. One yard equals _____ inch
[ ] 36 [ ] 38 [ ] 40 [ ] 42

3. The following is used to check the diameters of holes
[ ] plug gauge [ ] ring gauge
[ ] slip gauge [ ] standard screw pitch gauge

4. The ability by which a measuring device can detect small differences in the quantity being measured by it, is called its
[ ] damping [ ] sensitivity [ ] accuracy [ ] none of the above

5. The degree of closeness of the measured value of a certain quantity with its true value is known as
[ ] accuracy [ ] precision [ ] standard [ ] sensitivity

6. _____ is the process of determining the value of quantity being measured corresponding to a pre-established arbitrary scale.
[ ] Verification [ ] Sensitivity [ ] Measurement [ ] Calibration

7. What does allowance represent in clearance fits?
[ ] it represents minimum clearance and is positive
[ ] it represents maximum clearance and is positive
[ ] it represents minimum clearance and is negative
[ ] it represents maximum clearance and is negative

8. Why are pitch errors observed in threads?
[ ] lack of inspection [ ] incorrect ratio of tool work velocity
[ ] interference between mating parts [ ] all of the above

9. Which of the following statements is/are false?
[ ] interference is observed in tight fit
[ ] allowance represents minimum interference for interference fits
[ ] clearance is observed in push fit
[ ] all of the above

10. In hole basis system, basic size is equal to
[ ] maximum hole size [ ] minimum hole size
[ ] upper deviation which is zero [ ] none of the above

11. Which type of deviation is observed while calculating hole dimensions?
[ ] positive [ ] negative [ ] zero [ ] all of the above

12. What effect does pitch error have on nut and bolt?
[ ] major diameter of nut decreases and effective diameter of bolt increases
[ ] effective diameter of nut decreases and effective diameter of bolt increases
[ ] effective diameter of nut increases and effective diameter of bolt decreases
[ ] none of the above

13. Which of the following is true for interference fit?
[ ] shaft is always smaller than the hole
[ ] shaft is always bigger than the hole
[ ] interference fits have shaft and hole of same dimension
[ ] none of the above

14. Which among the following is a type of clearance fit?
[ ] force fit [ ] push fit [ ] slide fit [ ] tight fit

15. Which type of errors show linear relation between cumulative pitch error and length of thread?
[ ] periodic errors [ ] progressive errors [ ] both a and b [ ] none of the above

16. What is used to measure the major diameter of an external thread?
[ ] bench micrometer [ ] thread micrometer
[ ] one wire method [ ] all of the above

17. Smooth motion in involute tooth profile is possible due to
[ ] variation in pressure angle [ ] constant pressure angle
[ ] both a. and b. [ ] none of the above

18. A _____ gear transmits motion between two shafts which intersect.
[ ] bevel [ ] spur [ ] helical [ ] worm

19. Gauge used to measure small gap between the mating parts is known as
[ ] slip gauge [ ] feeler gauge [ ] gauge block [ ] dial gauge

20. The _____ tooth is derived from the tract of the point on a straight line, which rolls without slipping around a circle, which is the base circle.
[ ] cyclodial [ ] involute [ ] asymptotes [ ] epicyclodial

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F.M. : 55

SECTION "B"

Attempt *ALL* the questions.

1. Explain briefly the term "relative error". [3]

2. Describe the following types of errors, and state how they can be taking care of? [3]
   a. Environmental error
   b. Parallax error
   c. Errors due to vibrations

3. Explain briefly any three types of the instruments: [3]
   a. Absolute and Secondary Instruments
   b. Analog and Digital Instruments
   c. Mechanical, electrical and electronics instruments
   d. Self-operated and power-operated instruments

4. Write short notes on: [5]
   a. Sensitivity
   b. Linearity
   c. Threshold
   d. Resolution
   e. Hysteresis

5. Explain briefly the construction and working of a Micrometer. State the precaution to be taken while using micrometer. [3+2]

6. What is Clinometers? Describe how it can be used for measurement and setting of angles. Illustrate answer with sketches. [1 +3 = 4]

7. It is not possible to produce perfectly smooth surface. Justify the statement. [3]

8. Describe the principle and operation of Taylor-Hobson Talysurf Surface roughness instrument. [5]

9. Explain the principle of GO and NO-GO gauges. [4]

10. Explain different factors to be consider while using Gauge. [3]

11. Write Short note with suitable example on [6]
    a. Clearance fit
    b. Transition fit
    c. Interference fit

12. Name the various methods used for measurement of tooth thickness and explain any one of them. [4]

13. What are the various characteristics that would be measure in a screw thread? List instruments/apparatus that are required for measuring these characteristics. [4]

14. Explain any one method of measuring effective diameter of internal threads. [3]