

## SPECIFICATION FOR PENTA HEAD MICROSCOPE WITH CAMERA

**Optical System:** Universal color and Infinity corrected optical system.

**Illumination:** Built-in-Koehler illumination.

- The microscope should have an ergonomic stand with high intensity - at least 14-watt LED illumination system with a life of 50,000 hours or more.
- The intensity/brightness should be equivalent to at least a 12-volt 100-watts halogen bulb.
- Light Intensity adjustment should be present which can be used to increase or decrease the light

**Focus:**

- Coaxial coarse & fine focusing with at least 25 mm stage stroke with coarse adjustment limit stopper.
- Fine focusing knob with minimum adjustment gradations of 1  $\mu\text{m}$  or better.
- Torque adjustment for coarse adjustment knobs

**Observation Tube:**

- Wide field tilting ergonomic Trinocular tube with tilting angle range of  $5^\circ$  -  $35^\circ$  or more provided with paired wide field eyepieces
- Three-way light path distribution for simultaneous viewing and imaging of the slides (0,50,100)
- Tube should be secured against dropping by special dovetail
- Should have field of view minimum 22mm
- Should be upgradable to Fluorescence in the future

**Eyepieces:**

- Should be of at least 10X magnification, with diopter adjustment facility in both
- Eyepieces with F.N. 22 or higher.
- There should be facility of simultaneous viewing of slide in the eye-piece and the projected image on the monitor with no delay in the live image processing

**Nosepiece:** 6 positions or more revolving nosepiece with a slot for analyzer or DIC slider with preferable coded nosepiece

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**Objectives:**

- 6 High quality objectives of the Plan-Achromat class:
- Plan Achromat 2X, NA 0.06 or higher.
- Plan Achromat 4X/5X NA0.1 or higher, WD 18 or better.
- Plan Achromat objective 10X, NA 0.25 or higher, WD 10.6 or better.
- Plan Achromat Phase Contrast objective 20X, NA 0.4 or higher, WD 0.9 or better
- Plan Achromat Spring loaded Phase Contrast objective 40X, NA 0.65 or higher, WD 0.36 or better.
- Plan Apochromat objective 100X, NA1.40 or higher, WD 0.13 or better (spring, oil). Transmittance  $\geq$  80% from 400 – 700 nm or better.
- Objectives with higher N.A. will be preferred.
- All the objectives should have Transmittance of 80% or more & a copy of evidence should be provided.

**Stage:**

- Mechanical stage with ceramic coating, size of minimum 185x135mm with double slide holding capacity.
- Travel range of at least 76 x 25-52 mm.

**Condenser:** Minimum five position universal condenser (5 or better) and (NA 0.9 or better) for bright Field, Phase contrast, polarizing & Darkfield applications.

**Analyzer & Polarizer:** One set of analyzer & polarizer, 20cc immersion oil should be a standard part of the quote.

**Teaching Attachment:**

- For 1 + 4 persons, with tilting ergonomic binocular heads with continuously variable tilting angle range of 5° - 35° or more provided with paired widefield eyepieces of at least 10X magnification, with diopter adjustment facility in both eyepieces with F.N. 22 or higher.
- Should have multicolor LED arrow pointer which can be moved as per convenience for teaching and pointing.
- The control buttons should be convenient and sensitive.

**Upgradability:** The quoted microscope should be onsite upgradable to at least 4 more additional heads.

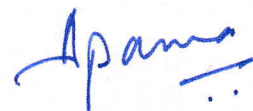
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### Image Capture, Projection and Analysis System:

1. 5 MP or better Color CMOS WIFI Camera with Image analysis software, Sensor Size 1/1.8 inch (7.140 mm × 4.980 mm) or better, Resolution (Max.) 2592 × 1944 pixels (Snapshot only), 1920 × 1080 pixels (HDMI, WLAN, on PC), Pixel Size 2.4 × 2.4 μm, A/D Converter (Bit Depth) 8 bits, Exposure Times 1 ms – 918 ms, Live Frame Rates Snapshot only (2592 × 1944 pixels), Up to 30 fps (on PC, 1920 × 1080 pixels), Up to 60 fps (HDMI Output, 1920 × 1080 pixels), Up to 25 fps (WLAN Output, 1920 × 1080 pixels). Data Transfer: HDMI, WLAN (using the WLAN adaptor), Ethernet (using the USB-to-Ethernet adaptor). Camera should be wifi enabled.
2. **Measurement Functions:** Line: Length measurement Parallel lines, Circle: Diameter, area, perimeter measurement, Angle: Angle measurement, Rectangle: Area, perimeter measurement, Polygon: Area, perimeter measurement, Point: Coordinates, number Scale bar, Annotation Functions Text, Arrow, Rectangle, Circle, 0.35X C-Mount Adaptor should be provided at no extra cost.
3. The camera shall provide an on-screen display (OSD) or separate screen of at least 11 inch that allows to control the camera without an extra Controller/computer or software. In the OSD, camera parameters and the image file name shall be selected and adjusted via mouse and keyboard. Images shall be stored conveniently on a USB flash drive and 4 USB port has to be supplied along with camera. The camera shall support both, the operation in stand-alone mode and in combination with a computer and software. The live image should be at least 70% of the field of vision.
4. Image analysis software should be original licensed software compatible with Windows, Android and iOS. No free software will be accepted.
5. Desktop Computer: Processor-i7, Windows latest version (Original Licensed version), at least 16GB RAM, at least 1TB SSD USB 3.0/3.2 24" or more of full HD Monitor, keyboard, mouse should be provided along with one hour UPS backup.
6. The Camera, Image Analysis S/W and Microscope should be from same manufacturer
7. One suitable sturdy table and chairs should be a standard system supply with no extra cost

**Dust Cover:** Should provide Dust Cover.

**Anti-fungus treated optics:** Must provide anti-fungus certification from manufacturer.



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**Other Mandatory Conditions:**

1. The bidder must mandatorily mention the web links of the manufacturer's website for the quoted microscope to confirm compliance to the specifications.
2. The quoted microscope should be BIS, ISO and CE/FDA certified.
3. The supplier should have direct technical and application support from the Principal Company in India.
4. The supplier should clearly mention the pre-installation requirement in their bid/offer.
5. The system should come with 2 years of comprehensive warranty and price of 8 years of CMC need to be quoted.
6. Installation at eastern India Govt/INI set up should be present (Minimum 3).



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