A-33025/30/2020-PM-K9 CELL/ 298-305
Government of India
Ministry of Home Affairs
(**Police K9 Cell, PM Division**)

26, Man Singh Road, Jaisalmer House,
New Delhi-11,
Dated: 19 May, 2025

To,

DsG: BSF, CISF, CRPF, ITBP, SSB, NSG & AR (through LOAR)

Subject: QRs and Trial Directives of 31 items of Veterinary (Hospital) Equipments.

The QRs and Trial Directives in respect of 31 items of Veterinary Equipments as per the Annexure-I and Annexure-II respectively have been accepted by the Competent Authority in MHA.

2. Henceforth, all the CAPFs should procure the above items required by them strictly as per laid down Technical Specifications/QRs.

3. Concerned CAPF will be accountable for correctness of the QRs/Trial Directives.

(Manjur Uddin Ahmed)
Second-in-Command (Vet)
Tel:011-23385621
e-mail i.111114976@itbp.gov.in

Encl: As above.

Copy to : SO(IT), MHA: with the request to upload the revised QRs and Trial Directives of 31 items of Veterinary (Hospital) Equipments on the MHA website, soft copy being sent through email.

(Manjur Uddin Ahmed)
Second-in-Command (Vet)
Tel:011-23385621
e-mail i.111114976@itbp.gov.in

Annexure-I

Check List for submission of Specification for Approval:

Sl. No.	Details	Remarks
1.	Description/Nomenclature of the store/items	QRs & TDs for 31 Veterinary Equipments/Instruments
2.	Use of the store/items	For diagnosis/treatment of animals
3.	Standards/QRs being used for the subject store/item/presently	Yes, QRs are available for 23 items (Sl. No.1, 2, 3, 4, 5, 6, 7, 9,10,11,12,13,14,15,16,17,18, 19, 20, 21, 22, 23 & 24 of *Appendix I*) which have been upgraded. QRs & TDs of remaining 08 items (Sl. No. 8, 25, 26, 27, 28, 29, 30 & 31 *of Appendix I*) have been prepared afresh.
4.	Whether the subject store/item carries BIS specification exist ?	Yes; BIS, ISO and CE standards of the stores exist and have been included in the QRs & TDs.
5.	Whether MHA specification exit ?	Yes, as stated at Sl. No. 3; QRs are available for 23 items of *Appendix I.*
6.	Have you proposed revision of QRs? If yes, a comparative statement of old and new QRs may be provided.	Yes. Old QRs of 23 items are at Sl. No.1, 2, 3, 4, 5, 6, 7, 8, 9, 10,11,16,17,18,19, 20, 21, 22, 23, 24, 26, 27 & 28 of *Appendix II* and new QRs of same 23 items are at Sl. No.1, 2, 3, 4, 5, 6, 7, 9, 10,11,12,13,14,15,16,17,18, 19, 20, 21, 22, 23 & 24 *of Appendix I.* Remaining QRs & TDs of 08 items (Sl. No. 8, 25, 26, 27, 28, 29, 30 & 31 of *Appendix I*) have been prepared afresh.
7.	Reasons for revision of existing QRs.	Due to advancement in technology, user-friendliness and enhanced safety features of stores available in the market.
8.	Financial implications due to revision QRs.	Increased competition will ensure reduction in price bidding by all participants.
9.	In the case on new QRs, provide details of research/study carried out by the sub-group before formulation of QRs.	Adequate survey has been done regarding availability of instruments/equipments in the market and its usage by various Govt. Institutions.

10.	Name, designation, educational qualification and experience of the member of the sub-group.	Name/Designation	Educational Qualification
		Dr. Sudhakar Natarajan DIG (Vet), Dte Gen ITBP (*Presiding Officer*)	MVSc (Surgery & Radiology)
		Dr. Kolhite Rhakho Comdt (Vet), FTR HQ, Punjab, BSF (*Member-I*)	BVSc & AH
		Dr. Vichar Nema 2IC (Vet), DT&BC, SSB (*Member-II*)	MVSc (Veterinary Medicine)
		Dr. Pooja Farswan DC(Vet), SHQ (L/Kheri) SSB (*Member-III*)	MVSc (Poultry Science)
		Dr. Rashmi, AC (Vet), FHQ BSF, (*Member-IV*)	BVSc & AH (MVSc Veterinary Gynaecology & Obstetrics)
		Dr. Deepanjyoti Gayan Comdt (Vet), Dte Gen ITBP (*Co-Opted Member*)	MVSc (Veterinary Microbiology)
11.	Name, designation, educational qualification of member from the expert organization.	All sub-group members mentioned at Sl. No. 10 are from different CAPFs having working knowledge of Veterinary Equipments/Instruments.	
12.	Details of the suggestions given by the experts.	NA	
13.	Whether these suggestion incorporated in the QRs? If not reasons with justification ?	NA	
14.	Whether QRs were hosted on website for 15 days by the sub- group ?	Yes	
15.	Details of the suggestions received on hosting of QRs on website. Reason for considering/not considering.	Suggestion was received from M/S Nihon Kohden India Pvt. Ltd for inclusion of "4-Part Veterinary Hematology Analyzer in the QRs/TDs; which has accordingly been incorporated.	
16.	Whether a certificate in terms of MHA letter date 4.01.2013 has been enclosed.	Yes	
17.	Whether QRs/Specification are generic in nature without being vendor	Yes, QRs/Specifications are generic in nature and not vendor specific.	

	specific and adequate tolerance range have been provided to make these competitive ?	
18.	Whether Trial Directives are being proposed along with QRs? If not, reasons may be given?	Yes
19.	Shelf life of the store/item ?	NA
20.	Whether the store/item is available in market? Anticipated cost of the item/store may be indicated.	Yes. Cost is competitive on GeM/market, as it varies from time to time.
21.	Confirmation to the effect that the proposed QRs have been prepared with the adoption of the state of the art technology & that these have the potential to lead a fair & healthy competition among the prospective producers/service providers.	Yes, QRs have been made keeping in view the latest state of art technology and are generic in nature.
22.	Whether any BIS/MOD/DGS & D/QRs for the store/items are available and if yes, what are the modifications proposed in the QRs.	NA
23.	Incase QRs are for Communication/IT store/item, whether views of DCPW/NIC have been obtained? If not, reason thereof.	NA
24.	Recommendations of the sub-group	Recommened as Proposed by the BOO. 27/4/25 ADG(Medical) CAPFs, NSG & AR
25.	Remarks of DG, SSB	6/5/25 महानिदेशक, सशस्त्र सीमा बल Director General, Sashastra Seema Bal पूर्वी ब्लॉक–V, आर.के. पुरम, नई दिल्ली–110066 East Block-V, R.K. Puram, New Delhi-66

Annexure-II

Certificate

"It is certified that procedure/methodology, prescribed in MHA O.M No.IV-24011/12/2011-Prov I dated 13.06.2012 and MHA letter No IV-24011/12/2011/Prov I dated 04.01.2013 have been followed in letter and spirit during preparation of QRs/Specification of "Authorized Veterinary Equipments for CAPFs, NSG & AR and Veterinary Equipments submitted by the forces to be procured under Mod Plan- IV. The details of Veterinary Equipments are furnished below:

Sl. No.	Name of Veterinary Equipments
1.	Veterinary Laser Shower with Laser Comb
2.	Portable Hand-Held Veterinary Fiber Endoscope
3.	Veterinary Multiple Parameter Monitor
4.	Portable Battery Operated Diagnostic Ultrasound Scanner
5.	Therapeutic Veterinary Laser with Spot Diagnosis
6.	Automated Biochemistry Analyser
7.	Fully Automatic Veterinary Haematology Analyzer (Three/Four Differential Parameters)
8.	Fully Automatic Veterinary Haematology Analyzer (Five Differential Parameters)
9.	Digital Veterinary Mobile X-Ray Machine
10.	Equine Weighing Scale
11.	Horse Tooth Rasp
12.	Urine Chemistry Analyzer
13.	Equine Ultrasonic Nebulizer
14.	Equine Low-High Speed Floor Mounted Treadmill
15.	Rigid Endoscope for Canines
16.	Veterinary Periodontal Instrument Kit
17.	Veterinary General Surgery Kit
18.	Veterinary Orthopaedic Surgery Kit
19.	Canine Emergency Carrier (Portable Kennel and Stretcher)
20.	Equine Hydraulic Surgery & Examination Table
21.	Electrolyte and Blood Gas Analyzer
22.	Canine Incubator
23.	Canine Treadmill
24.	Canine Hydraulic Surgery & Examination Table
25.	Inhalant Anaesthesia Machine with 02 Bulk Oxygen Cylinders
26.	Veterinary Stethoscope
27.	Operation Theatre Light
28.	Binocular Microscope
29.	300 mA Fixed X-Ray Machine
30.	Centrifuge Machine
31.	Vertical Autoclave

Sudhakar

(**Dr. Sudhakar Natarajan**)
DIG (Vet), Dte Gen ITBP
(*Presiding Officer*)

INTER-CAPF QR/TD BOARD FOR 31 VETERINARY EQUIPMENTS

APPENDIX - I

INDEX

QRs/TDs of Veterinary Equipments

Sl. No.	Name of Veterinary Equipments
1.	Veterinary Laser Shower with Laser Comb
2.	Portable Hand-Held Veterinary Fiber Endoscope
3.	Veterinary Multiple Parameter Monitor
4.	Portable Battery Operated Diagnostic Ultrasound Scanner
5.	Therapeutic Veterinary Laser with Spot Diagnosis
6.	Automated Biochemistry Analyser
7.	Fully Automatic Veterinary Haematology Analyzer (Three Differential Parameters)
8.	Fully Automatic Veterinary Haematology Analyzer (Five Differential Parameters)
9.	Digital Veterinary Mobile X-Ray Machine
10.	Equine Weighing Scale
11.	Horse Tooth Rasp
12.	Urine Chemistry Analyzer
13.	Equine Ultrasonic Nebulizer
14.	Equine Low-High Speed Floor Mounted Treadmill
15.	Rigid Endoscope for Canines
16.	Veterinary Periodontal Instrument Kit
17.	Veterinary General Surgery Kit
18.	Veterinary Orthopaedic Surgery Kit
19.	Canine Emergency Carrier (Portable Kennel and Stretcher)
20.	Equine Hydraulic Surgery & Examination Table
21.	Electrolyte and Blood Gas Analyzer
22.	Canine Incubator
23.	Canine Treadmill
24.	Canine Hydraulic Surgery & Examination Table
25.	Inhalant Anaesthesia Machine with 02 Bulk Oxygen Cylinders
26.	Veterinary Stethoscope
27.	Operation Theatre Light
28.	Binocular Microscope
29.	300 mA Fixed X-Ray Machine
30.	Centrifuge Machine
31.	Vertical Autoclave

Proceeding of	:	Inter CAPF Board of Officers
Assembled at	:	O/O DIG (Vet), Dte. Gen ITB Police, Block-4, CGO Complex, Lodhi Road, New Delhi-110003
Dated	:	03/03/2025 to 21/03/2025
By order of	:	O/O ADG (Medical) CAPFs, NSG & AR, Order No. E-12012/ADG(Med)/QRs/ DA-3/ 2025/ 445 dated 24/02/2025 and UO No. 27012/ADG (Medical/QRs/DA-3/639 dated 18.03.2025)
Purpose	:	To revise/update the existing QRs/TDs of Veterinary (Hospital) Equipments.

Composition of Board :

i.	**Chairman:**	Dr. Vinod Kumar ADG (Med), CAPF, NSG & AR
ii.	**Presiding Officer:**	Dr. Sudhakar Natarajan DIG(Vet), Dte. Gen ITBP, MVSc, (Surgery & Radiology)
iii.	**Member-I:**	Dr. Kolhite Rhakho Comdt. (Vet), FTR, Hqr, Punjab, BSF BVSc & A.H
iv.	**Member-II:**	Dr. Vichar Nema 2IC (Vet), DT&BC, SSB MVSc (Veterinary Medicine)
v.	**Member-III:**	Dr. Pooja Farswan DC (Vet), SHQ(L/Kheri), SSB, M.V.Sc (Poultry Science)
vi.	**Member-IV:**	Dr. Rashmi AC (Vet), DIG(Hqr) FHQ, BSF BVSc & AH (MVSc Veterinary Gynaecology & Obstetrics)
vii.	**Co-opted Member:**	Dr. Deepanjyoti Gayan Comdt (Vet), Dte Gen ITBP M.V.Sc (Veterinary Microbiology)

In pursuance to orders referred above, the Board of Officers assembled at O/O DIG (Vet), Dte. Gen ITB Police, Block-4, CGO Complex, New Delhi w.e.f. 03/03/2025 to 21/03/2025 for revision/updation of Qualitative Requirements (QRs) and Trial Directives (TDs) of Veterinary (Hospital) equipments.

2. The BoO reviewed the existing QRs/TDs of Veterinary equipments and amended/updated accordingly keeping in view advancement in technology, user-friendliness, enhanced safety features and availability in Indian markets.

3. While formulating the QRs/TDs, recent versions of veterinary equipments available in premier veterinary colleges/universities and other established laboratories was also taken into account.

4. The proposed QRs/TDs of veterinary equipments are generic in nature and not vendor specific.

5. Necessary quality certification requirements *viz.* BIS/ISO/CE etc. have been incorporated in the QRs/TDs.

6. The educational qualifications of members of the BoO have been mentioned in the proceeding and all technical inputs were leveraged to prepare comprehensive QRs/TDs.

7. Out of total 28 existing veterinary equipments formulated vide MHA UO No. IV/21011/05/2014-Prov-I dated 11.01.2016; QRs/TDs of 04 items *viz.* Rapid Disease Diagnosis Kit for Canine Parvo, Distemper and Hepatitis; Rapid Disease Diagnosis Kit for Canine Ehrlichia; Rapid Disease Diagnosis Kit for Canine Brucella and Rapid Disease Diagnosis Kit for Canine Leptospira were not revised/updated as these as expendable items and not equipments/instruments. In addition, 01 item *viz.* Veterinary Glucose and Blood Sugar Monitor requires no change.

8. QRs/TDs of remaining 23 veterinary equipments have been revised/updated.

9. In addition, QRs/TDs of 08 new veterinary equipments have been prepared and included.

10. The revised QRs/TDs of total 31 Veterinary (Hospital) equipments are enclosed in Appendix I.

11. Submitted for perusal and approval, please.

Member-III
Dr. Pooja Parswan
DC (Vet), SSB

Member-II
Dr. Vichar Nema
2IC (Vet), SSB

Member-I
Dr. Kolhite Rhakho
Comdt (Vet), BSF

Presiding Officer
Dr. Sudhakar Natarajan
DIG (Vet), ITBP

Member-IV
Dr. Rashmi
AC(Vet), BSF

Co-opted Member
Dr. Deepanjyoti Gayan
Comdt (Vet), ITBP

Recommendation of Chairman, ADG (Med), CAPF, NSG & AR : Recommended as Proposed by the BOO.

Approval of DG, SSB:

महानिदेशक, सशस्त्र सीमा बल
Director General, Sashastra Seema Bal
ब्लॉक-V, आर.के. पुरम, नई दिल्ली-110066
Block-V, R.K. Puram, New Delhi-66

Sl. No.	QRs	TDs
1.	**VETERINARY LASER SHOWER WITH LASER COMB**	
	i. Should be veterinary specific semiconductor therapeutic laser 785nm/910nm for optimal penetration in animal body. ii. Should have minimum area of irradiation of 55cm^2 to cover large affected area of small and large animals. iii. Should emit laser rays via laser shower and laser comb interchangeable by the user conveniently. iv. Should have maximum 21 simultaneously activated laser diodes with at least 4 intensive Ruby light diodes. v. Should have filter glass for protection of laser diodes when used in field areas. vi. Should have minimum effective power of 50mW in each laser diode with facility to adjust laser power from 5mW to 50mW depending on condition of the animal. vii. Should have pulse duration of 1mS and effective power of twice the peak power. viii. Should have multiple operation modes i.e. CW, multi-frequency, Nogier A-G, Bahr 1-7, Reininger 1-12 with all frequencies freely selectable on pulse modulation. ix. Should have the facility of adjusting laser parameters i.e. power, programme, therapy time/dose; parameters can be set directly on the unit.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

21/3/25 21/03/25 21/3/2025 21.03.25 21/3/25 Sudhakar 21/3/25

Co-opted Member **Member-IV** **Member-III** **Member-II** **Member-I** **Presiding Officer**

	x. Should have multi-frequency random signal from quartz oscillator. xi. Should have color display screen for displaying radiation divergence in X-direction and Y-direction. xii. Should be 3 B laser class with BF appliance classification good for working in extreme Indian condition 230V~,50-60 Hz power supply. xiii. Should be supplied with interchangeable adapters for different kinds of skin/hair/coat/fur and high-performance power bank for working off-grid. xiv. Should be supplied in sturdy metal carrying and storing case with laser shower and laser comb heads, laser safety glasses, operation manual and laser protection glass. xv. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xvii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
2.	**PORTABLE HAND-HELD VETERINARY FIBER ENDOSCOPE**	
	i. Should be flexible and soft fiber-optic endoscope for multiple utilities in canine diagnosis and procedures (Foreign body retrieval, stone removal or feeding tube placement) ii. Should be capable of gastro-intestinal examination, fiber optic duodenoscopy, rectoscopy & oesophagoscopy with fiberscope of working length between 55 cm to 170 cm, preferably of minimum 125 cm and insertion tube diameter of minimum 5.0 mm.	Board should physically check the machine for aforementioned parameters during demonstration.

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	iii. Should have 4-way tip deflection and functional accessory channel with field viewing angle of 25^0 to 30^0. iv. Should be equipped with the light source to adequately illuminate the field of interest with a transmitting cable connecting the light source to the endoscope. v. Should have xenon light source of minimum 100 W that can potentially burn for minimum 500 hours. vi. Should have provision of air-pump built in for insufflations (blowing of gas, such as carbon dioxide, into body cavity) and irrigation. It should also have provision of adequate suction with the suction tubing connecting the pump to the umbilical cord. vii. Should be coupled with 3CCD (Charge-Controlled Device) video-camera connectable to the eyepiece with camera control unit and monitor. viii. Should have RGB format of analog video signal for digital video signals, digital output use serial digital interface (SDI) that can transmit uncompressed digital video signals optimized for display on flat screens or digital recording. ix. Should have portable endoscopy system with full HD TFT screen of minimum 12" for viewing endoscopic images with minimum resolution of 1080 px. x. Should have endoscopic camera with rapid focusing device at the camera head including video adapter and camera system.	Manufacturer must submit an undertaking and supportive documents in this regard.

Co-opted Member | Member-IV | Member-III | Member-II | Member-I | Presiding Officer

	xi. Should be supplied as a complete set containing 2.0 mm biopsy channel, air and water channels, standard fenestrated biopsy forceps, equipment tower, flat-screen monitor, flexible instrument storage unit, channel cleaning brush, all channel irrigator with 50cc syringe, water bottle for water irrigation, carrying case and LED light source with pump. xii. Should be supplied with complete set of smooth cup biopsy forceps, loop snare, forked jaw graspers, rapter forceps and alligator forceps. xiii. Should have multiple input and output facilities i.e. separate compact keyboard, operation by remote control, panel & foot switch, freeze frame control, provision to attach directly to a video printer, video recorder, second monitor, PC, TCP/IP network, LAN system, S-VHS video in and S-VHS video out. xiv. Should have minimum 128GB memory stick at the front panel for the storage of minimum 10000 digital images. xv. Should be supplied in special shock proof case for canine fiber optic endoscope and portable endoscopy system. xvi. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xvii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	

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Presiding Officer

3.	**VETERINARY MULTIPLE PARAMETER MONITOR**	
	i. Should be veterinary specific portable multiple parameter monitor for continuous monitoring of vital parameters during surgical intervention or as and when required. ii. Should be handy and convenient for use even in extreme weather conditions working on rechargeable built-in battery. iii. Should have higher resolution of up to 800 X 600 px and minimum 10" Color TFT LCD Screen with maximum 12 wave form of display. iv. Should display up to 12 waveforms at any time. Numeric display includes HR/PR/SpO_2/NIBP with MAP/ respiration rate/temperature/IBP/$EtCO_2$. v. Should be equipped with display modes of Demo mode, Night mode and customize view for selected parameters and waveforms. vi. Should have facility of continuous data storage. vii. Should have inbuilt non-interference feature against electro-surgical device (Electro-cautery), electrical knife and defibrillator. viii. Should be fortified with protection against 360 Joule discharge and electrostatic potentials. ix. Should have scope for software up-gradation.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	x. Should be supplied with data transmission cable, patient cables (ECG leads, Temperature probe, SPO_2 Probe), equine and canine specific body clips/connectors and ECG gel. xi. Should have facility of detection and off-lead display on patient. xii. Measurement of NIBP based on the principle of automatic-oscillometric in auto or manual mode. xiii. Supplied with Li-ion 10.8V/11.1V, 5000/5200 mAh rechargeable battery, with backup of minimum 3 hrs. xiv. Should be equipped with both audio and colour coded visual alarms for vital signs (Polyphonic sound for alarms) during 'on-power' and 'on-back up' mode. xv. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xvi. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
4.	**PORTABLE BATTERY OPERATED DIAGNOSTIC ULTRASOUND SCANNER**	
	i. Should have light, compact body for portability and instrument exclusively for veterinary use. ii. Should be equipped with fully digital, wide band, multi frequency-based technology. iii. Should be equipped with imaging mode of B-mode, M-mode, Colour Doppler, PDI, DPDI, PW Doppler, CW Doppler.	Board should physically check the machine for aforementioned parameters during demonstration.

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Co-opted Member **Member-IV** **Member-III** **Member-II** **Member- I** **Presiding Officer**

	iv. Should be equipped with extensive calculation package and in-build image archiving. v. Equipment should work on 220-240V, 50 Hz electric power supply inputs. vi. The monitor size should be more than 12" medical grade high-definition LCD/LED. vii. The monitor display should be normal display along with thumbnail view of stored images and option to select big image by large view and full screen mode. viii. Should have minimum one hour of continuous scanning with rechargeable battery. ix. Equipment should have at least two transducer ports or connectors. x. Should have adjustable tilt with stereo sound via in-build facility of integrated speakers. xi. Equipment should have stored facility for clips and images with facility to transfer to PC, laptop and DICOM feature. Equipment should have minimum 120 GB inbuilt storage. xii. Equipment should have data entry settings for patient name, breed, species, body marks, image storage in JPEG & BMP file formats and video clip storing format. xiii. Equipment should be supplied in a carry case with battery charger. xiv. Equipment should be have minimum 64GB memory or expandable memory stick.	Manufacturer must submit an undertaking and supportive documents in this regard.

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Member-III

Member-II

Member-I

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xv. USG should be trolly mounted.

xvi. Fully-digital ultrasound beam transmission and reception should be available. High-definition ultrasound beam and data processing technology should be available with full-digital system allowing higher sensitivity and image quality to be achieved simultaneously.

xvii. Should be equipped with fully programmable, mode-sensitive Colour Touch Command Screen of more than 8" for direct access of all basic and advanced system controls.

xviii. Should be equipped with enhanced diagnostic features such as speckle reduction and edge enhancement imaging (eSRI) providing clear and sharp lesion/anatomical contour.

xix. Should have feature of Echo Enhancement Technology (eBoost) for enabling the view of deeper structures.

xx. System depth should be of minimum 40 cm.

xxi. One key optimization in B/Colour/PW as per the diagnostic requirement.

xxii. System should have Spatial and frequency compound Imaging (reView), tissue harmonic/Adaptive imaging (TAI) for enhanced contrast resolution.

xxiii. Should have Color Doppler and pulsed wave Doppler as part of the standard configuration with color Doppler having velocity, color invert with on/off feature.

xxiv. Should have Colour Doppler with automatic CFM focus, adjustable and selectable area of interest, position, size of minimum 0-120 gain.

21/3/25
Co-opted Member

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Member-IV

21/3/2025
Member-III

21/03/25
Member-II

21/3/25
Member-I

Presiding Officer

	xxv. Should have selectable and adjustable pulse wave gate position, gate size, frequency & gain from 0-21. xxvi. Should have adjustable baseline, adjustable audio, simplex mode and automatic measurements in pulse wave mode with user convertible presets & protocols. xxvii. Should have input and output options on the scanner device itself for external screen display, thermal printer, DVI connection and USS port facility. xxviii. Should have PW Doppler and Auto Trace Automatic Measurement for details of blood flow for more comprehensive diagnosis. xxix. System should be equipped with region specific presets. xxx. Entire system should be easily assembled and de-assembled. xxxi. Should have following multi-frequency probes with facility to interchange the probe without restarting the scanner to prevent any dynamic image loss: a. Wideband convex probe of frequency of 2-5 MHz for applications on Musculo-skeleton, Abdominal/ Uro-genital etc. b. Wide band linear probe with frequency of 5-12 MHz for diagnosis of superficial parts require lesser penetration and get specific details.	

Co-opted Member | Member-IV | Member-III | Member-II | Member- I | Presiding Officer

	c. Phased Array probe of frequency of 1-5 MHz for echocardiography or for the scanning of structures allow small acoustic window. Wide band linear rectal probe or trans-vaginal probe of frequency 4-8 MHz for gynecology & obstetrics diagnostic applications. xxxii. Equipment should be supplied with minimum 5 liters of ultrasound coupling gel. xxxiii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xxxiv. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
5.	**THERAPEUTIC VETERINARY LASER WITH SPOT DIAGNOSIS**	
	i. Should be veterinary specific, battery operated, portable and semi-conductor based therapeutic laser of wavelength ranging from 650 nm to 980 nm. ii. Should be microprocessor controlled with automatic acupuncture point-finder device. iii. Should have different working modes such as CW, Pulse and Single frequency. iv. Should be able to generate effective power of CW 1-30 mW /1-60 mW and pulse duration ranges from 0.05 - 1.00 sec with delay of 0.05 - 1.00 sec. v. Should have laser system using extended optical fiber for deep animal skin penetration, spot size ranging from 20-40 mm which should be adjustable as per requirement.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

21/3/25 — **Co-opted Member**

21/03/25 — **Member-IV**

21/3/25 — **Member-III**

21/03/25 — **Member-II**

21/3/25 — **Member-I**

21/3/25 — **Presiding Officer**

	vi. Should have in-built acupuncture point finding device with automatic skin contact switch-on. vii. Should have power station, file laser power measurement, loading station, digital indicator and other freely selectable features. viii. Should have single console operation for digital therapy display, laser measurement, charging system and presenter. ix. Should have X-direction radiation divergence of 8° to 20° and Y-direction radiation divergence of 20° to 25°. x. Should be supplied with safety accessories such as protective glasses/goggles, foot switch etc. xi. Should be 3 B laser class with BF appliance classification and compatible to work in extreme weather conditions on 100-240V~, 50-60Hz power supply. xii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xiii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
6.	**AUTOMATIC BIO-CHEMISTRY ANALYZER**	
	i. System type: Automated, random access system with automatic re-run facility. ii. Throughput: 200 or more photometric tests per hour or up to 360 tests per hour with ISE module.	Board should physically check the machine for aforementioned

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	iii. Online tests and programmable parameters: Minimum of 45 photometric tests with facility for calculated test, profiles and formulae for online and programmable parameters. iv. Assay Type: Endpoint, rate and fixed point type of assay. v. Calibration possibility: Linear kinetic, 1-point, 2-point rate linearity facility. vi. Sample Disk: Minimum 30 positions for routine tests with continuous loading facility. vii. Dedicated statistics table. viii. Sample Cups: Facility for primary tubes or sample cups of standard size. ix. Sample type: Serum, plasma, urine, CSF and body fluid should be assayed. x. Sample Volume: 2-100 micro liters. xi. Sample probe: Probe should be with level sensor and washing. xii. Reagent Volume: Less than 300 micro litre/test. xiii. Reagent Disk: Refrigerated position for at least 30 reagent containers. xiv. Reagent probe: Probe should be with liquid level sensor and washing. xv. Reagent Stirrer: Stirrer for proper mixing of sample and reagent. xvi. Cuvette: Permanent quartz glass/hard glass tube with on-board washing facility with de-ionized water and auto drain facility for the waste fluid.	parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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xvii. Reaction Temperature: Reaction cuvette temperature should be controlled by dry bath incubator.

xviii. Photometer: Photometric range of 340-700 nm with diffraction.

xix. Absorbance range and Sensitivity: Photometric OD range of 0-3 Abs, Sensitivity of 0.001 absorbance.

xx. Work station: Pentium based PC with at least17 inch colour monitor display with suitable UPS with 40 minutes backup and online 80 character line printer to hold continuous sheets of a normal size.

xxi. Data Output: Through display and online 80 character line printer to hold continuous sheets of a normal paper.

xxii. Data Storage facility to store at least 25,000 sample data on hard disk.

xxiii. Quality Control: Real time, individual and cumulative quality controls.

xxiv. Interface: Should be able to connect with LAN system.

xv. De-ionizer: Compatible Deionizer plant with sufficient storage facility.

xvi. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product.

xvii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.

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7.	FULLY AUTOMATIC VETERINARY HAEMATOLOGY ANALYZER (THREE/FOUR DIFFERENTIAL PARAMETERS)	
	i. Equipment should be veterinary specific and should include species *viz.* horse, cattle, camel, yak, dog etc. and provision for expandable animal setting. ii. Fully Automated Hematology Analyzer with 3-Part Differential reporting minimum parameters in whole blood mode *viz.* Hb, RBC, HCT, MCV, MCH, MCHC, RDW, WBC, Lymphocyte%, Lymphocyte number, Monocyte%, Monocyte number, Granulocyte%, Granulocyte number, PLT, PCT, PDW, MPV. OR Fully Automated Hematology Analyzer with 4-Part Differential reporting minimum parameters in whole blood mode *viz.* Hb, RBC, HCT, MCV, MCH, MCHC, RDW, WBC, Lymphocyte%, Lymphocyte number, Monocyte%, Monocyte number, Granulocyte%, Granulocyte number, Eosinophi%, Eosinophil number, PLT, PCT, PDW, MPV. iii. At least 3 histograms *viz.* WBC, RBC and PLT and should display warning flags for abnormal results. iv. Impedance method for WBC, RBC and PLT counting and sizing; photometric estimation of Hb by non-cyanide method. v. The instrument should be software driven for future upgradability. vi. Should be capable of both closed and open vial sampling. vii. Should have sample volume aspiration of equal or less than 30 µl in whole blood mode and equal or less than 20 µl in pre-dilute mode. viii. Should have capillary mode with automatic diluents dispense. ix. Throughput should be minimum 40 samples per hour. x. Should have automated probe wipe mechanism.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	xi. All results should be displayed on single screen and printable automatically or optionally with inbuilt printer including the institutional header. xii. Capability of automatic extended counting for cytopenic samples and of extended platelet counting. xiii. Should have sample ID auto-numbering and manual numbering of at least 14 digits. xiv. Should have option for at least 3 user definable reference ranges for reporting of results. xv. There should be system alerts for reagent empty and waste full. xvi. Should have data storage facility of at least 250 sample results. xvii. Should have on-board quality assurance and quality control programs like Levy Jennings charts and QC storage for 3 controls and at least 250 QC results. xviii. Linearity for all basic parameters like Hb, WBCs, RBCs, and Platelet should start from zero. xix. Precision (CV) values for various hematologic parameters measured should match ICSH guidelines. xx. The instrument should have an option for RS232 interface port and integration with LAN for intranet/internet. xxi. Appropriate work bench/stand should be provided with the instrument. xxii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xxiii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	

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8.	**FULLY AUTOMATIC VETERINARY HAEMATOLOGY ANALYZER (FIVE DIFFERENTIAL PARAMETERS)**	
	i. Equipment should be veterinary specific and should include species *viz.* horse, cattle, camel, yak, dog etc. and provision for expandable animal setting. ii. The instrument should be fully automated Laser flow cytometry, optical and impedance based 5-part differential hematology analyzer offering automatic start-up, shutdown and sample-analysis. iii. The instrument should give results for whole blood parameters *viz.* Hemoglobin (Hb) concentration, Red Blood Cell (RBC) count, Hematocrit (HCT) %, Mean Erythrocyte Volume (MCV), Mean Hemoglobin Volume (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC), Red Cell Distribution Width (RDW), Reticulocyte % and number, White Blood Cell (WBC) Count, Neutrophil % and number, Lymphocyte % and number, Monocyte % and number, Eosinophil % and number, Basophil % and number, Platelet Count, Mean Platelet Volume (MPV), Platelet Distribution Width (PDW). iv. The instrument should have random access discrete analysis modes for CBC, CBC+Differential and Immature Granulocytes (IG) v. The instrument should have throughput of at least 30 samples per hour. vi. The sample aspiration volume for the complete differential blood count should not be more than 50 µL. vii. The instrument should have the following analysis modes *viz.* Manual-Open, Capillary mode and Sampler mode. viii. Instrument should be able to enumerate immature granulocytes. ix. Instrument should be equipped with automatic rerun/reflex modes.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	x. Analyzer must have option to enumerate differentials for body fluid samples. xi. The instrument should have comprehensive information processing system with: a. User-friendly Windows XP/ 7 or higher version based software. b. Sufficient capacity to store sample data with histogram and scattergrams. xii. The instrument should have extensive QC features: a. Min one file for X bar M. b. Delta checks available for cumulative review. c. Option for online QC also available. xiii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xiv. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	

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9.	**DIGITAL VETERINARY MOBILE X-RAY MACHINE**	
	i. Should be portable veterinary specific system for both large and small animal diagnosis combining portable X-Ray unit for outside examination with all characteristics, stationary column and mobile table of high range stationary system. ii. Should have constant Ultra-High Frequency Ripple potential of minimum 3.2 kW 110 kHz Inverter with 2-point radiographic technique operation mode viz. kV and mA with minimum acceptable range of 40-125 kV and 10-100 mA respectively. iii. Should have kVp range from 40 to 125 with 20W super LED light source ensuring low thermal dissipation and minimum 1000 hours shelf life. iv. Should have very high accuracy of ±5% mA stations from the available range of mA. v. Should have inbuilt facility with automatic flexible exposure time ranging from 0.001 seconds to "10 seconds with 41 stations in 25% steps with capability to carry out unlimited number of consecutive exposures. vi. Should have mAs range 0.1 to 250 mAs. vii. Anode tube should be either stationary with anode angle of 12° or rotating with double focal spots of 1.0 mm and 2.0 mm. viii. Should have anode heat storage capacity of minimum 1000 kJ (1350 kHU) for use in different field and indoor environments.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	ix. Should equipped with rotable tube head in different desired positions without moving the machine. Similarly the tube arm should be moveable in upward/downward positions. x. Exposure time should be maximum of 10 seconds. xi. Should be able to move in 4 ways of minimum 100 mm in lateral and longitudinal direction. xii. Should be of minimum load bearing capacity of 75 kg. xiii. Should be made up of scintillator fluorescent material CSL/TFT for quality imaging. xiv. Should be able to delivers the high Detective Quantum Efficiency (DQE) allow to take full advantage of available signal while reducing dose. xv. Image processing time should not be more than 3 seconds, pre and post image enhancement facility should exist. xvi. Should be able to enhance variable density and form shading. xvii. The images should be available instantaneously and able to connect DICOM 3.0 based systems like PACS/HMS and DICOM printer. xviii. Images should be archived on USB/CD/DVD storage media. xix. Should be fully connectable to Small Animal X-Ray table with quick assembly and disassembly.	

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	xx. Should have Small Animal X-Ray table fitted with brake enabled rugged wheels and grid cabinet table top with indication marks of different standard cassette sizes. xxi. Should be supplied with portable, rugged and wheel fitted transportation and storage case with internal padding and cushioning. xxii. Should have portable digital imaging flat panel detector (DR plate) supplied with the X-ray equipment connectable to PC/Laptop with touch screen control. xxiii. Should have digital imaging flat panel detector with amorphous silicon type TFT or CSL with following specifications: a. Pixel Pitch : 140µm b. Active Pixel Array : 3072/3072 pixels c. Valid data bits (A/D) : 14 bits d. Dynamic Range : >73dB e. Energy Range : 40kV-120kV f. Preview image access time : ≤ 3 seconds xxiv. Minimum Console size should be of 12.6", 8GB RAM and 500 GB Hard Disc Drive. xxv. Should have dedicated Veterinary Anatomically Programmed Radiography (APR) software pre-installed with detailed diagnosis.	

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	xxvi. Should be compatible with DICOM 3.0 and PACS and have HDMI portal for external display. xxvii. Radiation Safety certification is required. xxviii. Personnel Protection Accessories to be included with system. xxix. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xxx. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
10.	**EQUINE WEIGHING SCALE**	
	i. Should be sturdy, heavy-duty and accurate. ii. Should be equipped with walk-on and walk-off platform made from stainless steel with anti-skid rubber flooring for durability, safety and acoustic absorption. iii. Should have robust and heavy scale platform made up of galvanized iron with effective standing area not less than 2 meter(L) x 1 meter(W) and 10 cm (H). iv. Should have maximum deviation of ±1% with inbuilt horse weight averaging software. v. Minimum weight of the scale should be 100 kg excluding rubber mat of minimum thickness of 2.5" (approx. wt. 20 kg).	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	vi. Should display weight in kg with lowest weight increment of 500 gm with weighing capacity of up to of 2000 kg. vii. Should have alarm system for overload and malfunctioning of weighing machine. viii. Should have memory facility function with 5 digits backlit LED display in aluminum housing and read-out unit with rechargeable battery 4AH (approx. 100 hrs) having battery life of 15 hours. ix. Should be able to work accurately in extreme weather conditions/terrain with ability to withstand temperatures extending from minus (-)10°C to (+) 50°C and should be water-proof and sand proof. x. Should be equipped with basic functions; i.e. zero tare, accumulations functions (number of weighing of living animals & total weight). xi. Should be able to record and display weight quickly in minimum 5 seconds. xii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xiii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	

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11.	**HORSE TOOTH RASP**	
	i. Should be ergonomically designed weighing not more than 750 g with separate/built-in LED lights that illuminates the oral cavity. ii. Should have minimum 30 mm disk diameter with 360° rotating head workable in 4 positions with simple twist and curved system using pull and turn of the head to position the disk in required position. iii. The equipment should be curved that follows the natural shape of the jaw, allowing better access in the back of the mouth. iv. Head should be of small height to suitably work on the posterior molars. v. Should be battery operated and cordless with rechargeable battery or with motorized head. vi. Should have following different types of hand-pieces with non-heating diamond grinding and rasping disks each capable of performing approximately 400-500 rasping: a. Maxillary of minimum length 25 cm and minimum diameter 15 mm (may be of conical & cylindrical shape). b. Mandibular of minimum length 25 cm and minimum diameter 20 mm. c. Vestibular of minimum length 25 cm and minimum diameter 15 mm. d. Angle of minimum length 15 cm and minimum diameter 15 mm. e. Bowl of minimum length 15cm and minimum diameter 20mm.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	f. Disk of minimum length 15 cm and minimum diameter 50 mm with minimum disk thickness of 1mm. g. Bit seat of minimum length 15 cm and minimum diameter 15mm. h. Tooth socket of minimum length 9 cm and minimum diameter 15mm. vii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. viii. Equipment should be backed by Pan India 'After sales service' support including CAPF and paramilitary field units for at least one year.	
12.	**URINE CHEMISTRY ANALYZER**	
	i. Should have a facility to read minimum 11 parameters strip via multiple strip reader and analyzer based on RFID based open/close system. ii. Should have minimum output of 50 tests/hour via in-built cold light source. iii. Should have option to read micro albumins as one of the parameter. iv. Should have in-built RS 232 port, computer connectivity with storage of minimum 2000 patient data, multiple equipment interfacing with in-built facility to connect urine sediment analyzer and barcode reader. v. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. vi. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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13.	**EQUINE ULTRASONIC NEBULIZER**	
	i. Should be portable, battery operated and ventilation-dependent. ii. Should have veterinary nebulization unit with equine transparent mask, all-in-one equipment. iii. Should have basic ultrasonic nebulizer weighing less than 1000 g working on rechargeable Li-ion battery. iv. Should have ultrasonic frequency of minimum 120 kHz (± 10%) with average nebulization performance of 6.7 ml/min and maximum 15ml/min, particle size 0.47-6 µm. v. Should be supplied with head strap, connecting tubes, wall bracket, contact liquid, disposable cups etc. with 3 different sizes of masks. vi. Horse inhalation mask should be made from all-weather safe material. vii. Should have aerosol ambient temperature of 15°C to 35°C with aerosol relative humidity of 30% to 95%. viii. The ultrasonic nebulizer should be operable in extreme weather conditions. ix. Should be supplied in safe and sturdy carry case. x. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xi. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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14.	**EQUINE LOW-HIGH SPEED FLOOR MOUNTED TREADMILL**	
	i. Should be floor mounted equine high-speed treadmill with completely computerized system and maximum running speed of 70 Km/hr. ii. Should be equipped with 0-10 degree lifting frame to simulate hill work supported by hydraulic system and operated through console. iii. Should have provision of controlled exercise at all paces which can be perfect for both full training and rehabilitation. iv. Should be made up of high-quality galvanized sturdy steel frame. v. Should be supported by front and back ramp of length minimum 1.5 m each and safety rails of minimum 3 ft in height fitted with special cushions on both rails covered by leather/foam. The following minimum measurements must comply: a. Length without ramps- 4500 mm b. Length with ramps- 6200 mm c. Maximum height (ceiling height)- 3450 mm d. Height of the running surface- 380 mm e. Height of safety hook from the belt- 1100 mm f. Safety rails covered by special cushion- 2550 mm	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	g. Running surface- 1.1m x 4.1m h. Weight- 2000 kg vi. Running surface should be made up of low friction rubber/teflon structure, supported by 3-phase 400 V motor and equipped with cooling fan inside the frame. vii. Should be equipped with good suspension system with minimum cushioning of 3" and special arrangement to keep it to room temperature. viii. Should have smooth start/stop action with no jolts to unnerve horses. ix. Should have control system with variable port for stable speed variation, special frequency drive, 4 point emergency stop, back and front over-shoot protection sensor for running horse, auto-stop for final parameter running, starter, fuses, switches and earth grounding system. x. Should have LCD computerized display for distance, time, speed, inclination, heart rate and TPR, horse history, special program to store into memory. xi. Should be fitted with 3 phase, 40 HP motor using transmission through gear box and chain sprocket. xii. Should be fitted with horse heart rate monitoring unit completely connectable to PC/Laptop for data transmission into the computer. xiii. Should have features for horse safety and running *viz.* longer width and length for safety of horse, suspension and frictionless running offering actual job training to horses, superior quality belt of dual surface and all tie accessible emergency stop.	

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	xiv. Should have conveyer belt made of high-density, anti-skid rubber, 3 ply and minimum thickness of 12 mm. xv. Should have salient features *viz.* shock absorbing and straight running surface, automatic wind blower via 1 meter industrial fan, dung guide on belt, programmable logical controller for all parameters displayed on touch screen with laser jet printer, 8 GB RAM & 1000 GB HDD, separate program to store history of horse and exercise details. xvi. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xvii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
15.	**RIGID ENDOSCOPE FOR CANINES**	
	i. Should be able to be used for multiple diagnostic utilities such as canine urethra-cystoscopy(females), antegrade rhinoscopy and otoscopy. ii. Should have minimum diameter of 2 mm (preferably 2.7 mm) and the operating sheath should accommodate a 5-Fr flexible instrument, such as biopsy forceps. iii. Should be equipped with the light source to adequately illuminate the field of interest with ransmitting cable connecting the light source to the endoscope. iv. Should have xenon light source of minimum 100 W that can potentially burn for minimum 500 hours.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive

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	v. Should be coupled with 3CCD (Charge-Controlled Device) video-camera connectable to the eyepiece with camera control unit and monitor. vi. Should be equipped with RGB format of analog video signal for digital video signals, digital output use serial digital interface (SDI) that can transmit uncompressed digital video signals optimized for display on flat screens or digital recording. vii. Should be supplied with complete set of smooth cup biopsy forceps, loop snare, forked jaw graspers, raptor forceps and alligator forceps. viii. Should have multiple input and output facilities i.e. separate compact keyboard, operation by remote control, panel & foot switch, freeze frame control, provision to attach directly to a video printer, video recorder, second monitor, PC, TCP/IP network, LAN system, S-VHS video in and S-VHS video out. ix. Should have minimum 128GB memory stick at the front panel for the storage of minimum 10,000 digital images. x. Should be supplied in special shock proof case for canine fiberoptic endoscope and portable endoscopy system. xi. Should have portable endoscopy system with full HD TFT screen of minimum 12" for viewing endoscopic images with minimum resolution of 1080 px. xii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xiii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	documents in this regard.

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16.	**VETERINARY PERIODONTAL INSTRUMENT KIT**	
	i. Should be made up of medical grade stainless steel (304 to 450 grade). ii. Should be made up of corrosion resistant material. iii. Should be ultrasonic cleaned. iv. Should include following instruments: a. Ochsenbein chisel of size 16.5 cm b. Banhart Curette of size #1/2 c. Cone Socket front surface mirror of size #3 and #4 d. Mirror and Handle with cone socket of size 18 cm e. Sharpening stone. test rod , stone oil f. Gracey curette of size # 11-12, 18 cm , #13-14, 18cm ,#5-6 g. Periodontal probe of size 15cm h. Double end explorer i. Columbia curette of size #13/14 j. Double ended periosteal elevator of size 18cm	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	k. Orban scaler of size 18 cm l. Sterilization /storage cassette m. Jacquette scaler of size #1SSE, 18 cm v. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product.	
17.	**VETERINARY GENERAL SURGERY KIT**	
	i. Should have the following contents in the standard set exclusively for veterinary general surgery: a. Instrument tray with cover (11"X7"X2") with 0.4 mm thickness- 02 No's b. Instrument tray with cover (8"X6"X2") with 0.4 mm thickness- 02 No's c. Tissue Forceps 11 Cm (1X2 teeth)- 04 No's d. Tissue Forceps 13 Cm (1X2 teeth)- 02 No's e. Straight Mayo Scissors 5.5"- 04 No's f. Metzenbaum Scissors, curved 6"- 02 No's g. Metzenbaum Scissors, curved 8"- 02 No's	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	h. Metzenbaum Scissors, Stright 6"- 02 No's i. Metzenbaum Scissors, straight 8"- 02 No's j. Suture cutting Scissors Sharp/Blunt Straight- 01 No k. Halsted Mosquito Haemostat forceps 5" curved- 04 No's l. Haemostat curved forceps 7.25"- 04 No's m. Kelly Haemostat 5" straight- 04 No's n. Kelly Haemostat 5" curved- 04 No's o. Allis tissue forceps 5", 7X7 teeth- 05 No's p. Backhaus towel Clamp 5.25"- 06 No's q. Mayo-Hegar Needle holder 8"- 02 No's r. Scalpel Handle # No.3- 02 No's s. Spay Hook- 01 No t. Surgical Dressing Drum (9"X9"), (11"X9")- 02 No's u. Seen Retractor- 01 No	

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	v. Saline bowl- 01 No ii. Should be made up of non-corrosive, non-reactive metal of surgical grade stainless steel. iii. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product.	
18.	**VETERINARY ORTHOPAEDIC SURGERY KIT**	
	i. Should include following contents in the standard set exclusively for veterinary orthopaedic surgery: a. Jacob chuck & Key- 01 No b. Spoon Hofmann Retractor- 02 No's c. Army-Navy Retractor or Senn Retractor- 02 No's d. Periosteal elevator- 01 No e. Medium Pin Cutter or Mini electric bone saw (round) - 01 No f. Reduction forceps- 01 No g. Kirschner Wires- 02 No's h. Intramedullary Pins- 02 No's i. Orthopaedic wire 18,20,22 G- 01 No. of each size j. Wire Cutter- 01 No	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	k. Bone Curette- 01 No l. Mallet- 01 No m. Wire Twister- 01 No n. Bone file- 01 No o. Kern bone holding forceps Long- 02 No's p. Kern bone holding forceps Small- 02 No's q. Medium pin cutter- 01 No r. Bone cutting forceps- 02 No's s. Osteotome Chisel- 01 No ii. Should be made up of non-corrosive, non-reactive metal, of surgical grade stainless steel. iii. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product.	
19.	**CANINE EMERGENCY CARRIER (PORTABLE KENNEL AND STRETCHER)**	
	Portable Kennel: i. Should be airline adoptable carrier and meets all requirements of major airlines (IATA approved). ii. Should be made up of heavy duty recycled plastic with minimum weight of 12 Kg and the minimum dimension 40" (L) x 25" (W) x 32" (H) sufficient to accommodate one adult sized dog.	Board should physically check the machine for aforementioned parameters during demonstration.

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	iii. Should be designed with elevated interiors for comfort of dog, metal wire mesh door, vents for ventilation with carrying handle positioned at top for convenience. iv. Should be equipped with wheels, that can be attached or detached as per requirement. v. Should be easy to assemble and clean. vi. There should be strap holes to hold the carrier in secured & stationary way in airlines without any discomfort to the dog. vii. Should comply the industry specific safety standards. viii. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product. **Dog Stretcher:** i. Should be a complete immobilization device for transportation of dogs in the event of emergency, illness, injury or disability in simple & secured way. ii. Should be light weight which can be handled easily in close spaces such as stairs, emergency vehicle, lifts etc. iii. Should be able to hold minimum animal weight of 100 kg, preferred size should not be less than 45" in length and 25" in width.	Manufacturer must submit an undertaking and supportive documents in this regard.

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	iv. Should be made up of durable nylon bed with handle and safety fastener closure strap to secure animal in place. v. Should have concave patient surface to provide lateral support, improve dog's sense of security and minimize the movement of patient's spine during lifting and transport. vi. Should be able to separate in half for application with facility to separate at either end to eliminate unnecessary movement especially in cases of hip injuries. vii. Should offer continuous head support surface to improve neutral alignment and minimize head movement during evacuation. viii. Should be of light weight and flexible make easy to roll or fold for transportation or storage in emergency vehicle or dog ambulance. ix. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product.	
20.	**EQUINE HYDRAULIC SURGERY & EXAMINATION TABLE**	
	i. Should be custom-made stainless-steel equine surgical and examination table crafted from durable, non-corrosive stainless steel to comfortably accommodate minimum 1000 kg of animal weight. ii. Should have appreciable maneuverability in respect of side panels, panels can be locked & unlocked effortlessly.	Board should physically check the machine for aforementioned parameters during demonstration.

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	iii. Should have the feature of 4-way tilt mechanism to access the animal closely. iv. Should have mainframe of minimum 4' (W) & 7' (L) equipped with three removable panels on both sides and have following dimensions: a.Table- 290 X 140 cm b. Extended length- 340 cm c. Head support of table- 90 X 100 cm d. Width of table excluding side panels- 50 cm e. Side panels table- 50 X 35 cm f. Side panels head support- 85 X 35 Cm g. Wheels diameter- 15 cm h. Padding thickness- 5 cm i. Minimum Weight- 300 kg v. Should have minimum height of 32 cm and maximum height of 112 cm, able to be flexed at both ends by maximum of +/- 25°.	Manufacturer must submit an undertaking and supportive documents in this regard.

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	vi. Should be able to lift up and down with self-contained power unit or by the means of hydraulic force. vii. Should be easily cleanable and disinfected with stainless steel body wiped by hand or can be pressure-washed for thorough cleaning. viii. Should have stainless steel wheel castors with directional lock. ix. Surface of the table should be coated with aluminum oxide blast/double paint. x. Should have several drain holes throughout the table to ensure no water pool on surface of the table, electric motor completely enclosed in water-tight casing and corrosion-resistant receptacles and switches. xi. Should be supplied with set of four dorsal leg poles or tie loops, SS Colon tray (Table Mount), SS intestinal tray (Free Base) and foam positioning pads. xii. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product.	
21.	**ELECTROLYTE AND BLOOD GAS ANALYZER**	
	i. Should be fully automatic, upgradeable, fast electrolyte & blood gas analyzer exclusively for veterinary use. ii. Should measure essential parameters *viz.* pH, pCO2, pO2, Hematocrit, Lactate, glucose, Na+, K+, Ca++. All parameters should be measured simultaneously. iii. Should be able to process the sample volume of less than 100 µl.	Board should physically check the machine for aforementioned parameters during demonstration.

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	iv. Should work on fully automatic test card technology – rectangular shape with built in gold plated electrodes and concealed calibrated fluids lines with micro technology for fluid movement. v. Data display should be on well-illuminated, adequate size screen display. vi. Data storage of minimum 1000 patients results stored on analyzer with ability to input all patient data, temperature and ventilator settings. vii. Should be able to supply power using rechargeable Lithium- ion battery with backup of 6 hrs. viii. Should have connectivity via Blue tooth and WiFi for HIS and LIS. ix. Should have auto calibration before every sample is inserted. x. Should have user friendly operating touch screen with barcode scanner and operating working temperature ranging from 15 to 30 degrees. xi. Should be upgradeable to future parameters like Cl^-, creatinine on the same card. xii. System should come along with a Windows based Personal Digital Assistant to control the entire system & printer. xiii. Should have facility to stand by blood gas cum electrolyte analyzer in case of breakdown. xiv. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. xv. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	Manufacturer must submit an undertaking and supportive documents in this regard.

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22.	CANINE INCUBATOR	
	i. Should be 35" (L) x 22" (W) x 19" (H) in dimensions and weigh more than 10 kg. ii. Should be equipped with dual flow circulation and heating system ensuring consistent and balanced temperature control. iii. Should work on three stage water filtration system with internal integrated water tank. iv. Should be equipped with built-in forced air nebulizer, generating extremely small particles, that allows for immediate absorption into finest capillaries and alveoli. v. Should have UV based sterilization system along with self monitoring CO_2 sensing system. vi. Should create whole spectrum of healing light. vii. Should have easy to access port for oxygen input. viii. Should have exclusive central air conditioning system. ix. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product. x. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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23.	CANINE TREADMILL	
	i. Should have the capacity to exercise all dogs from 5 to 85 kg body weight. ii. Should be made up of high-quality galvanized sturdy steel frame. iii. Should be equipped with heavy duty wire mesh on both sides of the conveyor belt. iv. Should have pre-installed exercising program and facility for user to create own program depending on individual dog's training and exercise needs. v. Should comply with minimum dimension of equipment as 64" (L) X 22" (W) X 40" (H) and running area of 50" (L) X 16" (W). vi. Should be equipped with console with LCD/LED keypad display. vii. Should have front and rear roller made up of steel. viii. Should have in-built tilt feature with multiple angle adjustments. ix. Should be equipped with silent running motor minimum of 2 HP with peak power of 4 HP. x. Should operate with a speed ranging from 0.5 to 12 km/hr with acceleration/de-acceleration facility. xi. Should have shock absorbing running belt of minimum thickness of 1.5 mm.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	xii. Should have emergency stopper with safety key mechanism. xiii. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product. xiv. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
24.	**CANINE HYDRAULIC SURGERY & EXAMINATION TABLE**	
	i. Should be made up of stainless steel with tilt top mechanism. ii. Should have the minimum dimension of 60" (L) X 20" (W) X 36" (H). iii. Should be of sturdy makeup with weight bearing capacity of minimum 80 kg and maximum of 150 kg. iv. Should have flexible panel to accommodate dog in various positions. v. The height should be adjustable with foot pedal. vi. Should have two adjustable planes.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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25.	INHALANT ANAESTHESIA MACHINE WITH 02 BULK OXYGEN CYLINDERS	
	TYPE : i. The equipment must be certified for veterinary use. ii. Should provide an accurate and continuous supply of medical grade gases mixed with an accurate concentration of anaesthetic vapour for delivery to patient at a safe pressure and flow. iii. The components of the system should comprise of Anaesthesia machine, Inbuilt ventilator, Vapouriser, Gas delivery system, Multi para monitor and 02 Bulk oxygen cylinders (Type B). iv. The anaesthesia workstation should be trolley mounted. v. The Material used for Anaesthesia workstation must be rust-proof ABS plastic with metal reinforcements. vi. Anaesthesia workstation should have minimum of two drawers to keep the accessories. It should have good mobility, anti-static caster wheels with locking facility & conveniently placed handles for easy movement of the machine. vii. All the components such as anaesthesia machine, integrated ventilator, vaporizer and patient monitor should have seamless compatibility and efficient functioning. **PERFORMANCE PARAMETERS** i. The machine should have passive mode of integrated scavenging system with pressure release valve.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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	ii. The machine should have battery back-up of minimum 2 hrs duration for anaesthesia workstation, ventilator and monitor. iii. The machine should have the facility of manual ventilation, gas and agent delivery system in case of electricity and battery failure. iv. The machine should have the facility of Air / N_2O interlock. v. The machine should have flow rate ranging between 0.2 to 6 L/min. **GAS DELIVERY SYSTEM:** i. The machine should have the availability of Pin index yokes for oxygen and nitrous oxide gases. ii. There should be availability of separate Pin index yokes and cascading type flow meters for oxygen, nitrous oxide and air. iii. There should be availability of rotameter control guards in anaesthesia workstation. iv. There should be availability of pressure gauges for cylinder and pipelines in anaesthesia workstation v. Machine should have the provision of audible and visual oxygen failure alarms. vi. Machine should be capable of minimum emergency oxygen flow of 35-70 litres per minute. **VAPOURISER** i. Machine should have the facility of interlock for vapouriser. ii. Vapouriser should have minimum agent capacity of 200ml for free volatile anaesthetic agent.	

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iii. Vapouriser should be compatible to Sevoflurane and Isoflurane gases.

iv. Sensor connection should be internal to prevent accidental disconnection during usasge.

v. Machine should be capable to deliver volume percentage in the range of 0-10%.

vi. Machine should have 02 numbers of quick mount type vapourizers for easy interchangeability at one time.

BREATHING SYSTEM

i. Breathing system should have fresh gas de-coupled/compensation, closed circle absorber system.

ii. Range of pressure relief valve should be in range of 05-75 millibar.

iii. Machine should be capable of single step change over from spontaneous to bag ventilation.

iv. Machine should be supplied with reusable autoclavable closed silicone circuits.

v. Breathing system should have the facility of leak and compliance test.

vi. Machine should be supplied with 10 numbers of Bain circuit.

vii. Machine should be supplied with at least 10 numbers of Jackson Rees circuit.

viii. Volume capacity of breathing system should be 1.5 litres.

ANAESTHESIA VENTILATOR:

i. Available modes of operating ventilator should be Manual / Spontaneous, volume controlled (VC), pressure controlled (PC), Synchronized Intermittent Mandatory Ventilation (SIMV).

ii. Tidal volume of ventilator should be in the range of 20-1400 ml.

iii. Positive end expiratory pressure (PEEP) of ventilator should be in the range of 0-20 mbar.

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iv. Breathing frequency should be in the range of 04-60 BPM.

v. Screen size of Ventilator monitor should be at least 10 inches.

vi. Integrated ventilator should have the facility to monitor $EtCO_2$ and automatic identification of agents.

vii. Ventilator should be able to ventilate with atmospheric air in case of total gas supply failure.

MULTIPARA MONITOR:

i. Type of monitor should be TFT or LCD in nature.

ii. Screen size of monitor should be at least 10 inches.

iii. Should be able to display parameters such as HR, SpO_2, NIBP, ECG, Temp, Agent identification (MAC), Capnography etc.

iv. Machine should have the provision of ECG monitoring with standard lead configuration I, II, III, avL, avF&V filters that can protect against defibrillator, electro surgery potentials, arrhythmia analysis and ST segment analysis with trends.

v. Machine should be supplied with veterinary compatible Pulse oximetry sensors .

vi. Monitor should be able to display all parameters in single screen.

ADDITIONAL ACCESSORIES:

i. It should be provided with 02 Re-breathing bags each of 500ml, 1 Litre, 2 Litre, 3 Litre & 4 Litre capacity.

ii. It should be provided with 02 sets of 3- & 5-point ECG leads with alligator clips.

iii. It should be provided with 02 numbers of nasopharyngeal / rectal and skin temperature probes.

iv. It should have the provision for laryngoscopes.

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	v. It should provide 02 SpO_2 sensors. vi. It should provide at least 01 NIBP cuff with the machine. vii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. viii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	
26.	**VETERINARY STETHOSCOPE**	
	i. Should be suitable to auscultate higher and lower frequencies of large and small animals respectively, with the provision of dual-head stainless steel chest piece with large/small diaphragm. ii. Should have light weight single lumen durable connecting tube contain neither natural rubber latex nor phthalate. iii. Should have comfortable soft ear tips made from anodized aluminum with excellent acoustic sealing. iv. The device should be equipped with a diaphragm diameter of at least 4.0 cm and 3.0 cm, a minimum length of 69 cm, and a maximum weight of 150 grams. v. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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27.	**OPERATION THEATRE LIGHT**	
	i. Should be mobile and of dome shape with minimum diameter of 500 mm. ii. The height of the light frame should be adjustable both horizontally and vertically. iii. The light intensity should be minimum of 1,20,000 Lux with minimum spot diameter of 125 mm. iv. Colour temperature range should be 3500 K to 5000 K. v. Colour rendering index should be minimum of 90 RA vi. Should be operatable at 220 V/50 Hz AC power supply. vii OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product. viii. Equipment should be backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.
28.	**BINOCULAR MICROSCOPE**	
	SIMPLE BINOCULAR MICROSCOPE i. Should have two viewing tubes, 30^0 inclined each with one wide field eyepiece (10x) along with one additional viewing tube (trinocular head) for camera attachment . ii. Should have sturdy, stable base body with binocular and focus adjustment controls. iii. Should have in-built pointer, quadruple nose piece with adjustable inter-ocular space of 48-75 mm.	Board should physically check the machine for aforementioned parameters during demonstration.

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	iv. Should have Co-axial low-drive mechanical stage and smooth co-axial coarse and fine motion. v. Should be equipped with high quality semi plan objectives i.e. 4x, 10x, 40x & 100x (Oil-immersion) vi. Should have Abbe condenser with in-build aperture iris diaphragm. vii. Should have illumination base with LED light source and adjustable brightness. viii. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. ix. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year. **BINOCULAR MICROSCOPE WITH CAMERA** The specifications for "Binocular microscope with camera" would be similar as the "Simple binocular microscope" with the following additional parameters. i. Should be equipped with high-definition digital camera with resolution equal to or more than 20 mega pixels with facility for video preview and rechargeable battery. ii. Should be equipped with video cable to simultaneously connect camera and personal computer to LCD monitor through VGA port and attachment device (adopter) to fix the camera with additional viewing tube.	Manufacturer must submit an undertaking and supportive documents in this regard.

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29.	**300 mA FIXED X-RAY MACHINE**	
	A. DR (DIGITAL RADIOGRAPHY) SYSTEM i. It should be specifically designed for all aspects of general X-Ray imaging and operating at a high frequency of 50 KHz for highly efficient X-ray production and pre-eminent image quality. The integrated design of the machine allows the operator to acquire X-ray Images very conveniently. **High Frequency X-Ray beam generator:** a. Generator should be of latest technology with high frequency of 50 KHz b. Constant Power output of 30 KW or more c. 300 mA at 100KV d. KV range should be 40 to 125 KV or more in 1 KV/step e. mA output: 300mA or more f. mAs range should vary from 1 to 200 mAs or more **STAND** Tube Stand with Counter Balanced Tube Head with following features should be provided: Tube Stand: a. Height of the stand: 2200 mm or Less b. Longitudinal movement of column on track: 1900 mm or more c. Total up/down movement of the tube head: 1300 mm or more. d. Tube rotation: +180 degree	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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Detector Stand

a. Height of the stand: 2200mm or Less
b. Up /down travel of Bucky: 1300mm or more
c. Bucky tilting angle: 0° to 90°
d. Removable arid should be provided

TABLE:

a. Length: 2000 mm or more
b. Width: 700 mm or more ,
c. Height from ground: 725 mm or less
d. Locks should be available on front wheels for table stability during exposure

FLAT PANEL DETECTOR:

a. The detector should be flat panel type with A-Si (amorphous silicon) and scintillator.
b. Size of detector should be 43 cm x 43 cm or more
c. Active Image matrix 3K x 3K or better
d. Image depth should be 14 bit or better
e. Pixel size should be 150 µm or less
f. Detector resolution should be more than 3.31p/mm
g. DOE (Detector Quantum Efficiency) should be more than 65%.

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OPERATING STATION/WORK STATION:

a. Digital Display of KV &mAs

aa. KV & mAs increase and decrease control on graphical user interface

ab. Ready and X-Ray ON indication on graphical user interface

ac. Self diagnostic Program for error code display of faults such as Earth fault error, KV error, Filament error & Tube's Thermal Overload.

b. An Inbuilt overload protection device.

c. Anatomical Programming Radiography (i.e. APR) Pre-programmed parameters of Anatomy which helps the user to select exposure parameters based on body part, examination view and size of the animal. Since it is a computer-based system (fully integrated) thus any number of Organ programming combinations is possible.

d. A dual action hand Switch with Retractable cord for Radiation Protection of Operator.

IMAGE ACQUISITION SOFTWARE AND ITS CHARACTERISTICS

Software should provide complete control of all image capture functions within the examination room. It enhances the entire workflow by delivering diagnostic images instantly. It also allows user to transfer X-Ray images electronically to remote workstations, image archives, and printers. It also has an excellent performance on image quality control such as:

MAIN FEATURES

a. Digital image processing technology
b. Preview image in less than 5 seconds.
c. Exam Specific Algorithms image processing for consistent image quality of all body parts.
d. Preset image processing tools for different anatomy
e. Image cropping
f. Image mirror, rotate.

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g. Image annotation

h. Add image ,accept/reject comments

i. Separate log for Rejected, Accepted and Printed images

j. True size for printing.

k. Hard disc capacity for image storage >3000 images or more

l. Inbuilt CD/DVD writer facility

FULL DICOM 3 COMPATIBILITY

a. DICOM work list

b. DICOM Print

c. DICOM Store

MONITOR: 1 No. 19" or more LCD/TFT/LED monitor

POWER SUPPLY REQUIREMENT: Three Phase, 400 Volts AC 50Hz with line resist 0.2 Ohms. Line Regulation ±10%.

ACESSORIES:

a. Servo Voltage Stabilizer of Suitable rating - 1 No.

b. Tray Dry laser Chemistry Printer - 1 No's

b. Lead Aprons - 02 Nos.

d. Lead protection screen- 1 No.

ii. OEM should have necessary certifications *viz.* BIS, CE, EN-1508, ICMED and relevant ISO standards applicable for the product. The unit should be approved by AERB

iii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year

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B. COMPUTED RADIOGRAPHY (CR) SYSTEM

A Computed Radiography (CR) system can also be used for capturing and reading radiographic images using photostimulable phosphor (PSP) plates with the X-Ray beam generator QRs mentioned above. The QRs of Computed Radiography (CR) is as under:

i. CR System (Reader /Imager)

a. Digitizer (CR) system should have the capacity to process approx. 35 cassettes or more per hour of the largest size 14"x17"at 10 Pixel resolution.

b. It Should have Constant spatial /Reading resolution of 5 & 10 pixels/mm for standard resolution cassette.

c. Standard workstation (console) should be coupled with CR image storage capacity of at least 2000 images,

ii. CR Workstation/Console should have following features:

a. Image post processing

b. Window levelling

c. Pre Loaded Annotation & Add Annotation

d. Automatic exposure correction

e. Edge enhancement stepwise

f. Contrast & Brightness adjustment

g. Shuttering / ROI finder

h. DICOM Print , DICOM image output to network / workstation

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i. Grid pattern removal software & noise compression processing

j. Gray scale reversal

k. Gray scale resolution : 12 bits or more

l. Image preview time 50 Sec of Largest size cassette 14"x17"

m. Time required for feeding/loading IP is maximum 100 sec for largest size cassette 14"x17"

n. True size printing should be possible from reader console

o. Automatic exposure correction & facility for manoeuvring reading sensitivity manually

p. Registration & cassette identification should be possible to be done before and after the exposure (pre/post registration)

q. Multiple image printing with multiple format

r. Measurement of image, insert scale

s. Image inverse, Image flipping, image magnification , Rotation

t. Printing multiple patient on one film

u. Should have a hard disk of 500 GB or more for storing images

iii. Dry Laser camera / Printer

Dry Laser camera with two film sizes on-line 14"x17", 10" x 14"/11"x 14", 10" x 12" and 8" x 10"

a. Spatial resolution : 500 DPI or more

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	b. Gray scale resolution : 14 bits or more c. Processing capacity : 80 films / hour for 14"x17" & 100 films / hour 10"x14" d. Acceptable film size :14"x 17", 10"x14"/11"x 14", 10 x 12" & 8 x 10" etc e. Output time for first image of 14"x17" testing purpose : Min.100 Sec or more f. Day light film loading g. DICOM compatible h. Printer should be Laser. **iv. Cassette for CR with screen (IP) with holding rack** a. 14"x17"-1 Nos. b. 10"x12"-1 Nos. **v. Suitable 3 KVA online UPS with 15 minute backup.** vi. OEM should have necessary certifications *viz.* BIS, CE and relevant ISO standards applicable for the product. vii. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	

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30.	**CENTRIFUGE MACHINE** i. Should be Microprocessor controlled with large LCD display of time, speed and temperature with digitally controlled buttons, dynamic brakes, step less speed regular with zero start switch and speed indicator with timer and protected fuses. ii. The programmable speed should be with separate short spin key (in seconds). iii. Should be equipped with brushless maintenance free motor drive with low noise levels less than 60 db at maximum speed. iv. Should have automatic rotor recognition and automatic imbalance detection. v. Should have double lid locking system for maximum safety. vi. Should run at maximum speed of 3500-4800 rpm with maximum RCF 3000-4000 g with speed/RCF increment in steps of 1,000 or less. vii. Should be able to work on wide temperature range of -150°C to +40°C and able to maintain 40°C at maximum speed. viii. Should have Fixed Angle Rotor accommodating 24 No's 3.0 to 5.0 ml conical reaction tubes, including polysulfonelide. ix. Should also supply Fixed Angle Rotor made of polypropylene 12 No's 1.5/2.0 ml conical reaction tubes, including polysulfonelide. x. Should have adapters for 0.2 ml PCR reaction tubes/ aliquots. xi. Rotor and Chamber should be made up of chemical resistant and rust free material. xii. Should be equipped with suitable constant power supply backup/in-built battery xiii. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product. xiv. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	Board should physically check the machine for aforementioned parameters during demonstration. Manufacturer must submit an undertaking and supportive documents in this regard.

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31.	**VERTICAL AUTOCLAVE**	
	i. Should be made up of stainless steel of SS-304 grade. ii. Should be double walled with a steel jacket. iii. Jacket and boiler should be made up of stainless steel. iv. Sterilizer chamber capacity (usable volume) should be 31 to 40 liters and electrically heated. v. Sterilizer chamber door should be hinged. vi. Door sealing should be suitable to withstand temperature up to 140 degree Celsius & pressure up to 20-30 psi. vii. Should be equipped with PID temperature controller. viii. Audio - visual alarm facility should be available for notifying low water alarm system as well as steam release valves and safety valves, cut-off automatically when the autoclave is dry. ix. Working temperature should be 121 to 135 degree celsius. x. Working pressure should be 15 to 32 psi. xi. Automatic pressure control switch should be equipped. xii. Manual Water Filling & Removal. xiii. Should be equipped with a heater at the bottom and with capacity≥ 3 KW xiv. Should be equipped with low water cut off, Auto safety door lock and spring loaded safety valve of stainless steel. xiv. OEM should have necessary certifications *viz.* BIS and relevant ISO standards applicable for the product. xv. Equipment should be installed on-site with complete user technical training and backed by Pan India on-site 'After sales service' support including CAPF and paramilitary field units for at least one year.	

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