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प्रश्न-पुस्तिका संख्या व बारकोड /  
Question Booklet No. & Barcode

MPA-25

इस प्रश्न-पुस्तिका को तब तक न खोलें जब तक  
कहा न जाए। Do not open this Question  
Booklet until you are asked to do so.

पुस्तिका में पृष्ठों की संख्या : 24  
Number of Pages in Booklet : 24  
पुस्तिका में प्रश्नों की संख्या : 150  
No. of Questions in Booklet : 150

Paper Code : 73

Sub : Paediatric Cardiothoracic and  
Vascular Surgery

समय : 02:30 घण्टे + 10 मिनट अतिरिक्त\*

Time : 02:30 Hours + 10 Minutes Extra\*

Exam Date - 3/7/2025

अधिकतम अंक : 150

Maximum Marks : 150

प्रश्न-पुस्तिका के पेपर की सील/पोलिथीन बैग को खोलने पर प्रश्न-पत्र हल करने से पूर्व परीक्षार्थी यह सुनिश्चित कर लें कि :

- प्रश्न-पुस्तिका संख्या तथा ओ.एम.आर. उत्तर-पत्रक पर अंकित बारकोड संख्या समान हैं।
- प्रश्न-पुस्तिका एवं ओ.एम.आर. उत्तर-पत्रक के सभी पृष्ठ व सभी प्रश्न सही मुद्रित हैं। समस्त प्रश्न, जैसा कि ऊपर वर्णित है, उपलब्ध हैं तथा कोई भी पृष्ठ कम नहीं है / मुद्रण त्रुटि नहीं है। किसी भी प्रकार की विसंगति या दोषपूर्ण होने पर परीक्षार्थी वीक्षक से दूसरा प्रश्न-पत्र प्राप्त कर लें। यह सुनिश्चित करने की जिम्मेदारी अभ्यर्थी की होगी। परीक्षा प्रारम्भ होने के 5 मिनट पश्चात् ऐसे किसी दावे/आपत्ति पर कोई विचार नहीं किया जायेगा।

On opening the paper seal/polythene bag of the Question Booklet before attempting the question paper, the candidate should ensure that :  
• Question Booklet Number and Barcode Number of OMR Answer Sheet are same.

- All pages & Questions of Question Booklet and OMR Answer Sheet are properly printed. All questions as mentioned above are available and no page is missing/misprinted.

If there is any discrepancy/defect, candidate must obtain another Question Booklet from Invigilator. Candidate himself shall be responsible for ensuring this. No claim/objection in this regard will be entertained after five minutes of start of examination.

### परीक्षार्थियों के लिए निर्देश

1. प्रत्येक प्रश्न के लिये एक विकल्प भरना अनिवार्य है।
2. सभी प्रश्नों के अंक समान हैं।
3. प्रत्येक प्रश्न का मात्र एक ही उत्तर दीजिए। एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा।
4. OMR उत्तर-पत्रक इस प्रश्न-पुस्तिका के अन्दर रखा है। जब आपको प्रश्न-पुस्तिका खोलने को कहा जाए, तो उत्तर-पत्रक निकाल कर ध्यान से केवल नीले बॉल पॉइंट पेन से विवरण भरें।
5. कृपया अपना रोल नम्बर ओ.एम.आर. उत्तर-पत्रक पर सावधानीपूर्वक सही भरें। गलत रोल नम्बर भरने पर परीक्षार्थी स्वयं उत्तरदायी होगा।
6. ओ.एम.आर. उत्तर-पत्रक में करेक्शन पेन/व्हाइटनर/सफेदा का उपयोग निषिद्ध है।
7. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है।
8. प्रत्येक प्रश्न के पाँच विकल्प दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4, 5 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले (बबल) को उत्तर-पत्रक पर नीले बॉल पॉइंट पेन से गहरा करना है।
9. यदि आप प्रश्न का उत्तर नहीं देना चाहते हैं तो उत्तर-पत्रक में पाँचवें (5) विकल्प को गहरा करें। यदि पाँच में से कोई भी गोला गहरा नहीं किया जाता है, तो ऐसे प्रश्न के लिये प्रश्न अंक का 1/3 भाग काटा जायेगा।
10. \*प्रश्न-पत्र हल करने के उपरान्त अभ्यर्थी अनिवार्य रूप से ओ.एम.आर. उत्तर-पत्रक जाँच लें कि समस्त प्रश्नों के लिये एक विकल्प (गोला) भर दिया गया है। इसके लिये ही निर्धारित समय से 10 मिनट का अतिरिक्त समय दिया गया है।
11. यदि अभ्यर्थी 10% से अधिक प्रश्नों में पाँच विकल्पों में से कोई भी विकल्प अंकित नहीं करता है तो उसको अयोग्य माना जायेगा।
12. मोबाइल फोन अथवा अन्य किसी इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए राजस्थान सार्वजनिक परीक्षा (भर्ती में अनुचित साधनों की रोकथाम अध्यापक) अधिनियम, 2022 तथा अन्य प्रभावी कानून एवं आयोग के नियमों-प्रावधानों के तहत कार्यवाही की जाएगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

उत्तर-पत्रक में दो प्रतियाँ हैं - मूल प्रति और कार्बन प्रति। परीक्षा समाप्ति पर परीक्षा कक्ष छोड़ने से पूर्व परीक्षार्थी उत्तर-पत्रक की दोनों प्रतियाँ वीक्षक को सौंपें, परीक्षार्थी स्वयं कार्बन प्रति अलग नहीं करें। वीक्षक उत्तर-पत्रक की मूल प्रति को अपने पास जमा कर, कार्बन प्रति को मूल प्रति से कट लाइन से मोड़ कर सावधानीपूर्वक अलग कर परीक्षार्थी को सौंपें, जिसे परीक्षार्थी अपने साथ ले जायेंगे। परीक्षार्थी को उत्तर-पत्रक की कार्बन प्रति चयन प्रक्रिया पूर्ण होने तक सुरक्षित रखनी होगी एवं आयोग द्वारा माँगे जाने पर प्रस्तुत करनी होगी।

### INSTRUCTIONS FOR CANDIDATES

1. It is mandatory to fill one option for each question.
2. All questions carry equal marks.
3. Only one answer is to be given for each question. If more than one answers are marked, it would be treated as wrong answer.
4. The OMR Answer Sheet is inside this Question Booklet. When you are directed to open the Question Booklet, take out the Answer Sheet and fill in the particulars carefully with Blue Ball Point Pen only.
5. Please correctly fill your Roll Number in OMR Answer Sheet. Candidates will themselves be responsible for filling wrong Roll No.
6. Use of Correction Pen/Whitener in the OMR Answer Sheet is strictly forbidden.
7. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. A wrong answer means an incorrect answer or more than one answers for any question.
8. Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
9. If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.
10. \* After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.
11. A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.
12. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt with as per rules.

Warning : If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would be liable to be prosecuted under Rajasthan Public Examination (Measures for Prevention of Unfair means in Recruitment) Act, 2022 & any other laws applicable and Commission's Rules-Regulations. Commission may also debar him/her permanently from all future examinations.



1. Right seventh intersegmental artery forms

- (1) Carotid artery
- (2) Subclavian artery
- (3) Arch of aorta
- (4) Innominate artery
- (5) Question not attempted

2. Arterial duct is formed by

- (1) Left sixth arch
- (2) Fourth arch
- (3) Second arch
- (4) First arch
- (5) Question not attempted

3. Which of the following statement is correct ?

- (1) There are 2 dorsal aortae during fetal heart development.
- (2) Left dorsal aorta mostly regresses.
- (3) The dorsal aorta between 1<sup>st</sup> and 2<sup>nd</sup> arch regresses.
- (4) Right dorsal aorta takes part in development of carotid artery.
- (5) Question not attempted

4. Which of the following is not a feature of right atrium ?

- (1) Long and narrow atrial appendage
- (2) Eustachian valve
- (3) Crista terminalis
- (4) Thebesian valve
- (5) Question not attempted

5. Which of the following feature is incorrect regarding morphologic anatomy of right atrium ?

- (1) Wide-based blunt-ended appendage.
- (2) Presence of limbus fossa ovalis
- (3) Presence of pectinate muscle in appendage which extend all around the parietal margin of vestibule.
- (4) Pectinate muscle limited to the appendage itself.
- (5) Question not attempted

6. L-shaped Aorta is seen in which of the following condition most commonly ?

- (1) Transposition of Great arteries.
- (2) Corrected transposition of great arteries.
- (3) Atrial Isomerism
- (4) Tetralogy of Fallot
- (5) Question not attempted

7. Left ventricle does not have one of the following feature :

- (1) Fine trabeculations
- (2) Juxtaposed AV and arterial valves
- (3) Very small outlet portion
- (4) Septal trabeculomarginalis
- (5) Question not attempted



8. Ventricular structure has following features except one
- (1) It's a three-layered structure.
  - (2) There are no fascial planes between muscle fibers.
  - (3) There are only 2 planes in left ventricle.
  - (4) The superficial and deep planes are attached to central fibrous skeleton.
  - (5) Question not attempted
9. Loop of Vieussens is formed by anastomosis between \_\_\_\_.
- (1) Left anterior descending and right coronary artery
  - (2) Right coronary and left main coronary artery
  - (3) Right coronary and left circumflex coronary artery
  - (4) Left anterior descending and left circumflex coronary artery
  - (5) Question not attempted
10. Which of the following statement is incorrect about cardiac valves?
- (1) Aortic valve has central position.
  - (2) Aortic valve is wedged between mitral and tricuspid valves.
  - (3) All four valves are connected to central fibrous body.
  - (4) Mitral and tricuspid valves are in different planes.
  - (5) Question not attempted
11. Kugel artery is source of blood supply to –
- (1) SA Node
  - (2) Atrioventricular Node
  - (3) Right Bundle Branch
  - (4) Left Bundle Branch
  - (5) Question not attempted
12. Which of the statement is false about tricuspid valve?
- (1) The anterior leaflet is largest.
  - (2) Septal leaflet is above membranous septum.
  - (3) Posterior leaflet is the smallest.
  - (4) It has a well-formed fibrous annulus.
  - (5) Question not attempted
13. All of the following statements about pulmonary valve are true, except:
- (1) Lighter construction of leaflet
  - (2) Normal absence of coronary artery origins
  - (3) Cusps have nodule at the mid-point
  - (4) There is fibrous continuity with the tricuspid valve
  - (5) Question not attempted
14. Total number of division of airway from trachea to alveoli –
- (1) 16                      (2) 17
  - (3) 20                      (4) 23
  - (5) Question not attempted



15. Which statement about mitral valve chordae is incorrect ?
- (1) There are 3 orders of chordae.
  - (2) First order attaches at the base.
  - (3) Commissural chordae are fan shaped.
  - (4) Third order chordae are seen in posterior mitral leaflet only.
  - (5) Question not attempted
16. Normal volume of Anatomical Dead space in an adult is -
- (1) 100 ml.                      (2) 150 ml.
  - (3) 200 ml.                      (4) 250 ml.
  - (5) Question not attempted
17. Thoracic duct is part of which mediastinum ?
- (1) Superior mediastinum
  - (2) Anterior mediastinum
  - (3) Middle mediastinum
  - (4) Anterior and posterior mediastinum
  - (5) Question not attempted
18. Which is incorrect statement about base of heart ?
- (1) It comprises 4 valves.
  - (2) Defined by plane of AV groove.
  - (3) It contains fibrous skeleton.
  - (4) It welds the valvular annuli but does not electrically separate atria and ventricle.
  - (5) Question not attempted
19. The concept of cardioplegia was first introduced by
- (1) Shumway    (2) Griepp
  - (3) Melrose    (4) Lellihei
  - (5) Question not attempted
20. Blood was used in cardioplegia for the first time by
- (1) Buckberg
  - (2) Gay and Ebert
  - (3) Hufnagel
  - (4) Kirsch
  - (5) Question not attempted
21. Anaesthetic drug which is to be avoided in presence of poor cardiac reserve
- (1) Etomidate
  - (2) Thiopental
  - (3) Benzodiazepine
  - (4) Ketamine
  - (5) Question not attempted
22. Nitrous oxide must be avoided in which condition ?
- (1) Right to left shunt
  - (2) Left to right shunt
  - (3) Severe pulmonary arterial hypertension
  - (4) Severe aortic stenosis
  - (5) Question not attempted



23. Definition of massive transfusion is –

- (1) Transfusion of 4 units of blood within 24 hours.
- (2) Transfusion of 8 units of blood within 48 hours.
- (3) Transfusion of blood equal to exceeding the person's blood volume within 24 hours.
- (4) Transfusion of blood 50% of total volume of person within 6 hours.
- (5) Question not attempted

24. Which is the safest with least side-effect and preferred induction agent for anaesthesia ?

- (1) Propofol
- (2) Etomidate
- (3) Ketamine
- (4) Thiopentone
- (5) Question not attempted

25. Clotting factors which are present in cryoprecipitate

- (1) Factor VII, Factor VIII, Factor IX, Fibrinogen
- (2) Factor II, Factor V, Factor IX, Factor X
- (3) Factor VIII, von Willebrand factor, Factor XIII, Fibrinogen
- (4) Factor IX, Factor X, Factor XI, Factor XII
- (5) Question not attempted

26. Which statement is false about cardiac reserve ?

- (1) It is capability of patient to increase cardiac output to various challenges.
- (2) It is linked to normal convalescence after cardiac surgery.
- (3) It is adequate cardiac performance alone.
- (4) Its inadequacy becomes evident in situation of increased  $VO_2$ .
- (5) Question not attempted

27. Which of the following statement about postoperative cardiac index is false ?

- (1) CI of  $2 \text{ l/m}^2$  in early postoperative period is acceptable.
- (2) In children there may be a drop in CI in 4 hours postoperatively before its recovery.
- (3) Mean arterial pressure is not of importance in postoperative recovery.
- (4) Infants and small children require higher CI for normal convalescence postoperatively.
- (5) Question not attempted



28. Which of the following statement is false after cardiac surgery in neonates ?
- (1) Lower arterial pressure indicates higher cardiac output.
  - (2) Higher atrial pressure has higher cardiac output.
  - (3) Lower atrial pressure has higher cardiac output.
  - (4) Higher arterial pressure has lower cardiac output.
  - (5) Question not attempted
29. Increased ventricular afterload causes all except following :
- (1) Increased stroke volume
  - (2) Decreased stroke volume
  - (3) Increased wall tension
  - (4) Increased ventricular transmural pressure during systole
  - (5) Question not attempted
30. Which of the following feature is suggestive of low cardiac output ?
- (1) Large core-peripheral temperature gradient
  - (2) Small core-peripheral temperature gradient
  - (3) Fever more than 101 °F
  - (4) Equal core-peripheral temperature gradient
  - (5) Question not attempted
31. Pulmonary hypertensive crisis is common in postoperative period of all the following conditions except in -
- (1) Truncus arteriosus
  - (2) TAPVC
  - (3) Complete Atrioventricular septal defect
  - (4) ToF (Tetralogy of Fallot)
  - (5) Question not attempted
32. Following is the wrong interpretation of pressure volume loop :
- (1) At the end of systole, the pressure volume loop is extended to a straight line called end-systolic pressure-dimension line.
  - (2) Slope of this line indicates contractility
  - (3) Increase in inotropy cause widening of loop
  - (4) Increase in contractility will cause narrowing of loop
  - (5) Question not attempted
33. Synchronized DC shock is preferred in which condition ?
- (1) Atrial fibrillation
  - (2) Asystole
  - (3) Ventricular fibrillation
  - (4) Pulseless ventricular tachycardia
  - (5) Question not attempted



34. Following is not the echocardiographic feature of Ebstein's anomaly :
- (1) Apical displacement of tricuspid valve septal leaflet
  - (2) Sail like anterior leaflet
  - (3) Large septal leaflet
  - (4) Atrialized right ventricle
  - (5) Question not attempted
35. Following are the features of heterotaxy syndrome, except :
- (1) Two different sinus P wave in right atrial isomerism
  - (2) Absence of P wave in left atrial isomerism
  - (3) Alternating QRS axes
  - (4) ST segment depression
  - (5) Question not attempted
36. In which of the following, continuous murmur is seen ?
- (1) AS with AR
  - (2) VSD with AR
  - (3) ALCAPA (Anomalous origin of left coronary artery from pulmonary artery)
  - (4) PS with PR
  - (5) Question not attempted
37. Sinus node dysfunction has maximum chance of occurrence in all except following :
- (1) Mustard operation
  - (2) Senning operation
  - (3) Fontan operation
  - (4) VSD closure
  - (5) Question not attempted
38. The risk of developing complete heart block is maximum with one of the following conditions :
- (1) First degree heart block
  - (2) Incomplete RBBB
  - (3) Complete RBBB
  - (4) RBB with left anterior hemiblock
  - (5) Question not attempted
39. Following are the disadvantages of CT scan in children with cardiac malformation, except one
- (1) Exposure to ionizing radiation.
  - (2) Use of iodine based contrast.
  - (3) Capability to image coronary arteries and peripheral pulmonary arteries.
  - (4) Limited capability of functional and hemodynamic assessment.
  - (5) Question not attempted
40. What is the point on cardiac catheterization that indicate operability ?
- (1) Size of shunt
  - (2) Cardiac output
  - (3) Pharmacologic evaluation of pulmonary vascular resistance
  - (4)  $VO_2$
  - (5) Question not attempted



41. Following are the features of situs solitus, except :
- (1) Short and straight left bronchus
  - (2) Long and curved left bronchus
  - (3) Stomach gas bubble on left side
  - (4) Cardiac mass on left side of chest
  - (5) Question not attempted
42. Upright T wave in lead  $V_1$  in one month Neonate is suggestive of –
- (1) Positive T wave on ECG is normal
  - (2) Left ventricular hypertrophy
  - (3) Right ventricular hypertrophy
  - (4) Bi-ventricular hypertrophy
  - (5) Question not attempted
43. Which of the following statement is incorrect in a normal heart ?
- (1) Base to heart length of left heart is longer than right.
  - (2) The base to heart axis is parallel.
  - (3) The base to heart axis is perpendicular.
  - (4) Base to heart axis for both ventricle is leftward, anterior and inferior.
  - (5) Question not attempted
44. Most common cause of sudden cardiac death in young people is
- (1) Hypertrophic cardiomyopathy
  - (2) Anomalies of coronary arteries
  - (3) Cardiomyopathies
  - (4) Long QT syndrome
  - (5) Question not attempted
45. Following is the limitation of MRI assessment in congenital heart disease :
- (1) Delineation of anatomy
  - (2) Assessment of chamber pressures
  - (3) Assessment of flow data
  - (4) Assessment of cardiac fibrosis
  - (5) Question not attempted
46. Which of the following is the advantage of MRI over CT scan ?
- (1) Requires sedation
  - (2) Takes longer time
  - (3) Inadequate in presence of pacemaker or coils
  - (4) Advantage of functional assessment
  - (5) Question not attempted
47. Multi-slice two dimensional gradient - Echo imaging MRI is Gold standard for –
- (1) Ventricular volumetry
  - (2) Great-artery anatomy
  - (3) Interventricular septum anatomy
  - (4) To delineate relation of VSD with great artery
  - (5) Question not attempted



48. Diagnostic cardiac catheterization is indicated in all of the following, except –

- (1) A complete diagnosis or hemodynamic information cannot be obtained by less invasive investigation
- (2) Clinical signs and symptoms are not consistent with diagnosis
- (3) Patient's clinical course is not progressing as expected
- (4) For measuring pulmonary artery size
- (5) Question not attempted

49. Uses of Risk stratification and outcome analysis include all, except –

- (1) Cost containment
- (2) Healthcare professional education
- (3) Effectiveness of case studies
- (4) Improving provider practices
- (5) Question not attempted

50. Which of the following is not a principle of Total Quality Management (TQM) applied to Healthcare?

- (1) Customer – Supplier relationships are the most important aspect of quality.
- (2) Its focus is on the most "vital few" process.
- (3) To develop new organizational structures.
- (4) Quality increases cost.
- (5) Question not attempted

51. Risk stratification is based on all, except –

- (1) Patient demographic
- (2) Comorbidities
- (3) Cardiac diseases
- (4) Environmental factors
- (5) Question not attempted

52. Which of the following investigation is used to determine neurological injury?

- (1) Serum S-100 protein
- (2) Serum NGAL
- (3) Serum CRP
- (4) Serum Ferritin
- (5) Question not attempted

53. Which of the following scores in cardiac surgery do not consider morbidity?

- (1) Euroscore 2
- (2) STS-PROM
- (3) SYNTAX
- (4) CHAD Vasc2
- (5) Question not attempted

54. Poiseuille's law is –

- (1)  $\text{Flow} \propto \frac{\text{radius}}{\text{length}}$
- (2)  $\text{Flow} \propto \frac{\text{length}}{\text{radius}}$
- (3)  $\text{Flow} \propto \frac{(\text{radius})^3}{(\text{length})^2}$
- (4)  $\text{Flow} \propto \frac{(\text{radius})^4}{\text{length}}$
- (5) Question not attempted



55. "Energy of contraction is proportional to the initial length of the cardiac muscle fiber."

This statement is also known as –

- (1) Fick's principle
- (2) Frank-Starling law
- (3) Law of Laplace
- (4) Haldane effect
- (5) Question not attempted

56. Reynold's number represent all of the following, except

- (1) Dimensionless number
- (2) It is for blood flowing in the artery
- (3) Denotes laminar flow only
- (4) A value of  $>2000$  denotes change from laminar to turbulent flow
- (5) Question not attempted

57. Long-term preservation of allograft is done at which temperature ?

- (1)  $-196^{\circ}\text{C}$
- (2)  $-20^{\circ}\text{C}$
- (3)  $0^{\circ}\text{C}$
- (4)  $4^{\circ}\text{C}$
- (5) Question not attempted

58. Which of the following statement is false regarding pulmonary allograft ?

- (1) Significant risk of pseudoaneurysm formation at the proximal anastomosis.
- (2) Calcification of arterial wall of pulmonary allograft is less common than aortic allograft.
- (3) Pulmonary allograft when subjected to systemic pressure, can show rapid dilatation.
- (4) Pulmonary allograft is a good substitute for aortic root replacement.
- (5) Question not attempted

59. One of the following is different for pediatric perfusion in comparison to adult

- (1) Perfusion pressure
- (2) CPB machine
- (3) Use of myocardial protection
- (4) Tubing circuit material
- (5) Question not attempted

60. One of the following factors is not correct for pediatric perfusion :

- (1) Smaller circulating blood volume
- (2) Lower oxygen consumption
- (3) Altered thermoregulation
- (4) Reactive pulmonary vascular bed
- (5) Question not attempted

61. One of the following is not the factor for systemic inflammatory response :

- (1) Hematocrit
- (2) Contact of blood with foreign surface of cardiopulmonary bypass
- (3) Mechanical shear stress
- (4) Contact of blood to air
- (5) Question not attempted



62. Which of the following statement is wrong about systemic inflammatory response during CPB in pediatric patient ?

- (1) SIRS is more pronounced in pediatric population.
- (2) Increased pulmonary vasoreactivity is observed.
- (3) SIRS response is damped in pediatric patients.
- (4) 50% of pediatric patients have pulmonary and cardiovascular dysfunction attributable to SIRS.
- (5) Question not attempted

63. Pulsatile blood flow during cardiopulmonary bypass is not associated with –

- (1) higher rate of oxygen consumption
- (2) reduction in level of metabolic acidosis
- (3) maintenance of relatively normal cell metabolism
- (4) increased secretion of renin
- (5) Question not attempted

64. Which is not the direct measure of adequacy of perfusion on cardiopulmonary bypass ?

- (1) Mean arterial pressure
- (2) Cardiac Index
- (3) Blood lactate levels
- (4)  $SVO_2$
- (5) Question not attempted

65. What flow is adequate for 28 °C temperature on cardiopulmonary bypass in  $l/min/m^2$  ?

- (1) 2.4
- (2) 2.2
- (3) 1.8
- (4) 1.6
- (5) Question not attempted

66. Which is the incorrect statement in the following statements ?

- (1)  $\alpha$ -stat strategy is also known as temperature uncorrected  $CO_2$  management strategy.
- (2) pH-stat strategy is temperature corrected  $CO_2$  management strategy.
- (3)  $\alpha$ -stat strategy is associated with cerebral vasodilatation.
- (4) pH-stat strategy is associated with loss of electrochemical neutrality.
- (5) Question not attempted

67. Absolutely safe duration of cardiac arrest at 18 °C is

- (1) 10 minutes
- (2) 40 minutes
- (3) 60 minutes
- (4) 15 minutes
- (5) Question not attempted

68. Which of the following is observed in pediatric myocardium as compared to adult ?

- (1) Ishaemic preconditioning absent
- (2) Insulin sensitivity normal
- (3) Calcium handling normal
- (4) Preferred substrate for ATP generation is fatty acid
- (5) Question not attempted



69. Which one is the most sensitive indicator of Acute rejection in heart transplant ?

- (1) Acute left ventricular end diastolic dimension increase by 20%.
- (2) Left ventricular posterior wall thickness increase of 20%.
- (3) Left ventricular fraction shortening decrease of 20%.
- (4) A decrease in peak rate of posterior wall diastolic thinning.
- (5) Question not attempted

70. All of the following statements are correct regarding pediatric lung transplant, except –

- (1) ABO compatibility is essential.
- (2) HLA matching is not required.
- (3) Cytomegalovirus mismatch is a contraindication.
- (4) Donor  $\text{PaO}_2$  should be more than 300 with  $\text{FIO}_2$  of 100%.
- (5) Question not attempted

71. What is the best design to study the prevalence of a disease ?

- (1) Cross-sectional study
- (2) Case-control study
- (3) Cohort study
- (4) Randomized controlled trials
- (5) Question not attempted

72. True about univariate analysis –

- (1) assess more than one variable of interest
- (2) determines cause or relationship
- (3) mainly conducted in descriptive epidemiological study
- (4) does not describe the variable of interest
- (5) Question not attempted

73. Which of the following describe the middle part of a group of numbers ?

- (1) Measure of Variability
- (2) Measure of Central Tendency
- (3) Measure of Association
- (4) Measure of Shape
- (5) Question not attempted

74. Find the incorrect match in ASD closure technique.

- (1) Atrial well – Gross technique
- (2) Atriocavopexy – Baileys
- (3) Inflow occlusion – Lellihei
- (4) Purse string – Sondergard technique
- (5) Question not attempted



75. Which of the following statement is incorrect about Scimitar syndrome ?

- (1) All/partial anomalous pulmonary venous connection of right lung to inferior vena cava.
- (2) An anomalous systemic artery from abdominal aorta may supply right lung.
- (3) Associated  $\bar{C}$  normal right lung and right pulmonary artery.
- (4) Dextroposition of heart
- (5) Question not attempted

76. Prosthetic patch aortoplasty for coarctation of aorta has following unique complication :

- (1) Re-coarctation
- (2) Posterior aortic wall aneurysm
- (3) Inadequate growth of arch hypoplasia
- (4) Collateral flow is hampered.
- (5) Question not attempted

77. Prosthetic interposition graft is a good technique in all, expect

- (1) Children > 10 year of age
- (2) Long segment coarctation
- (3) Aneurysm of aorta with coarctation
- (4) Children < 2 year of age
- (5) Question not attempted

78. Which of the following is correct finding in unroofed coronary sinus with persistent left superior vena cava ?

- (1) Left superior vena cava drains through coronary sinus into right atrium.
- (2) Left superior vena cava drain into left atrium between left atrial appendage and left pulmonary vein.
- (3) Coronary sinus drains separately into right atrium
- (4) Individual coronary veins connect separately to right atrium.
- (5) Question not attempted

79. Most common cyanotic congenital heart disease associated with complete atrioventricular septal defect is -

- (1) Tetralogy of Fallot
- (2) Transposition of great arteries
- (3) Double outlet right ventricle
- (4) Truncus arteriosus
- (5) Question not attempted

80. In which condition comma shaped ventricular septal defect patch is used ?

- (1) Closure of ventricular septal defect in transposition of great arteries
- (2) Closure of ventricular septal defect in corrected transposition of great arteries
- (3) Closure of ventricular septal defect in tetralogy of Fallot associated with complete Atrioventricular septal defect
- (4) Closure of ventricular septal defect in interrupted aortic arch
- (5) Question not attempted



81. Eisenmenger physiology develop in which of the following after 2 decades ?
- (1) Patent ductus arteriosus
  - (2) Aortopulmonary window
  - (3) Atrial septal defect
  - (4) Large ventricular septal defect
  - (5) Question not attempted
82. Aortic valve prolapse occurs most commonly in which type of ventricular septal defect ?
- (1) Perimembranous ventricular septal defect
  - (2) Inlet ventricular septal defect
  - (3) Outlet ventricular septal defect
  - (4) Muscular ventricular septal defect
  - (5) Question not attempted
83. Which of the following disease cause spontaneous atrioventricular block ?
- (1) Congenitally corrected transposition
  - (2) Mitral valve disease
  - (3) Palliated single ventricle
  - (4) Sinus venosus ASD
  - (5) Question not attempted
84. Which of the following syndrome is associated with isolated pulmonary stenosis ?
- (1) Down
  - (2) Noonan
  - (3) DiGeorge
  - (4) William
  - (5) Question not attempted
85. Chronic cyanosis lead to following, except :
- (1) Erythrocytosis
  - (2) Microcytosis
  - (3) Macrocytosis
  - (4) Clotting disorder
  - (5) Question not attempted
86. In which condition Paravalvular Aortic regurgitation occurs ?
- (1) Anomalous left coronary artery from pulmonary artery
  - (2) Congenital Aortic regurgitation
  - (3) Aortico-left ventricular tunnel
  - (4) Bicuspid aortic valve
  - (5) Question not attempted
87. Which of the following is false statement for Bicuspid aortic valve in adulthood ?
- (1) Most common congenital heart disease
  - (2) Associated with aortopathy
  - (3) Associated with dilation of aorta
  - (4) No association with aortic dilation
  - (5) Question not attempted
88. A left atrium to aortic diameter ratio of more than 1.2 : 1 on echocardiogram is suggestive of -
- (1) significant patent ductus arteriosus
  - (2) significant ventricular septal defect.
  - (3) significant atrial septal defect.
  - (4) significant aortic stenosis
  - (5) Question not attempted



89. Sudden death during follow-up in adult following tetralogy of Fallot repair is caused by following :
- (1) Residual VSD
  - (2) Residual RVOT stenosis
  - (3) Arrhythmia
  - (4) Pulmonary regurgitation
  - (5) Question not attempted
90. The features of secundum ASD in ECG are following, except :
- (1) RV hypertrophy
  - (2) Left axis deviation
  - (3) Right axis deviation
  - (4) rsR' pattern
  - (5) Question not attempted
91. Which of the following can cause right to left shunt after closure of ASD ?
- (1) Large eustachian valve missed as inferior margin of ASD
  - (2) Patch dehiscence
  - (3) Fenestration in flap valve of fossa
  - (4) Missed vestibular defect
  - (5) Question not attempted
92. Tricuspid z value of -2 to -3 on 2D echocardiography is suggestive of -
- (1) Normal right ventricle
  - (2) Mild right ventricular hypoplasia
  - (3) Moderate right ventricular hypoplasia
  - (4) Severe right ventricular hypoplasia
  - (5) Question not attempted
93. Which is the correct treatment strategy for pulmonary atresia with intact ventricular septum with right ventricular dependent coronary circulation ?
- (1) Shunt alone
  - (2) Pulmonary valvotomy with Aortopulmonary shunt
  - (3) Decompression of right ventricle by transannular patch alone.
  - (4) Decompression of right ventricle by pulmonary valvotomy and bidirectional Glenn shunt.
  - (5) Question not attempted
94. In which of the atrial septal defect the anomalous pulmonary venous connection to right atrial frequently coexist ?
- (1) Sinus venosus ASD
  - (2) Fossa ovalis ASD
  - (3) Posterior ASD
  - (4) Coronary sinus ASD
  - (5) Question not attempted
95. Which observation is an important consideration in closure of coronary sinus ASD ?
- (1) Unroofed coronary sinus
  - (2) Mitral valve prolapse
  - (3) Partial anomalous pulmonary venous connection
  - (4) Total anomalous pulmonary venous connection
  - (5) Question not attempted



96. Warden operation is a technique used for closure of which of the following defect ?

- (1) Sinus venosus ASD with PAPVC
- (2) Secundum ASD
- (3) Posterior ASD
- (4) Ostium primum ASD
- (5) Question not attempted

97. Following repair of ASD, survival after 60 year is :

- (1) Better survival than age matched population.
- (2) It will have equal survival than age matched population.
- (3) It has 7.5% loss each year if the patient is unoperated.
- (4) Closure of ASD will lead to age and gender matched survival.
- (5) Question not attempted

98. Pericardium should be the patch material in the following situation :

- (1) Sinus venosus ASD
- (2) Secundum ASD with mitral valve prolapse but no MR
- (3) Secundum ASD with repair for mitral regurgitation
- (4) Posterior ASD
- (5) Question not attempted

99. Which of the following is the commonest variety of TAPVC ?

- (1) Infra cardiac
- (2) Supra cardiac
- (3) Cardiac
- (4) Mixed type
- (5) Question not attempted

100. Which of the TAPVC most frequently present with pulmonary venous obstruction ?

- (1) Supra cardiac
- (2) Mixed
- (3) Infra cardiac
- (4) Cardiac
- (5) Question not attempted

101. In which condition Barberio-Marcial technique is used for complete repair ?

- (1) Truncus arteriosus
- (2) Transposition of great arteries with ventricular septal defect and pulmonary stenosis
- (3) Double outlet right ventricle with ventricular septal defect and pulmonary stenosis.
- (4) Total anomalous pulmonary venous connection.
- (5) Question not attempted



**102.** Aortopulmonary window is differentiated from Truncus arteriosus on 2D echocardiography by presence of which structure in Aortopulmonary window ?

- (1) Presence of single/common valve for Aorta and pulmonary artery.
- (2) Presence of two semilunar valve
- (3) Single arterial trunk
- (4) Ventricular septal defect is always present.
- (5) Question not attempted

**103.** Which of the following statement describe two ventricle repair in a case of complete AVSD ?

- (1) AV valve index of  $< 0.2$
- (2) Left AV valve to total AV valve area of  $0.4 - 0.6$
- (3) Left AV valve area/total AV valve area  $> 0.6$
- (4) Left AV valve area/total AV valve area  $< 0.4$
- (5) Question not attempted

**104.** Which of the following is the most common type of VSD ?

- (1) Muscular
- (2) Perimembranous
- (3) Doubly committed
- (4) Inlet
- (5) Question not attempted

**105.** Size of the VSD is defined by following :

- (1) Tricuspid valve
- (2) Pulmonary valve
- (3) Aortic valve
- (4) Mitral valve
- (5) Question not attempted

**106.** In which of the following VSD the conduction bundle is in close relation ?

- (1) Muscular VSD
- (2) Outlet VSD
- (3) Apical VSD
- (4) Perimembranous VSD
- (5) Question not attempted

**107.** Which of the following is false about pulmonary vascular disease ?

- (1) Heath Edward classification is used to define morphologic changes in pulmonary vascular bed.
- (2) More than grade 3 changes denote operability.
- (3) Less than grade 3 changes are associated with Lower Pulmonary arterial pressures.
- (4) Grade 4 and above implies inoperability.
- (5) Question not attempted

**108.** Moderately increased pulmonary vascular resistance is defined by following parameter :

- (1)  $< 4$  woods unit
- (2)  $> 8$  woods unit
- (3)  $4 - 5$  woods unit
- (4)  $5 - 8$  woods unit
- (5) Question not attempted



109. Following is incorrect for Infective endocarditis in VSD

- (1) Incidence is 0.15–0.3% each year
- (2) Occurs in age > 20 years
- (3) More in large VSD
- (4) Common in small VSD
- (5) Question not attempted

110. Following closure of a large VSD following changes in left ventricle occur except following :

- (1) LVEDV reduces and remains normal
- (2) LV systolic output increases
- (3) LV ejection fraction remains normal
- (4) LV mass returns to normal
- (5) Question not attempted

111. Residual coarctation or recoarctation is labelled when the gradient across the coarcted area is –

(Find the minimum gradient for recoarctation.)

- (1) more than 10 mm Hg
- (2) more than 20 mm Hg
- (3) more than 40 mm Hg
- (4) more than 50 mm Hg
- (5) Question not attempted

112. Which of the following is not the criteria for tetralogy of Fallot ?

- (1) Right ventricular outflow tract obstruction
- (2) Malaligned VSD
- (3) Aortic override
- (4) Posterior deviation of conal septum
- (5) Question not attempted

113. Which of the following statement about pulmonary valve in tetralogy of Fallot is incorrect ?

- (1) It is stenotic in 75% cases.
- (2) Stenotic valves are usually bicuspid.
- (3) Non-stenotic valves are tricuspid.
- (4) Pulmonary valve is larger than aortic valve when it is not stenotic.
- (5) Question not attempted

114. Which of the following is incorrect about the aortic root in tetralogy of Fallot ?

- (1) It has biventricular origin.
- (2) Clockwise rotation of root.
- (3) Aortic root is enlarged.
- (4) Aortic root is normal in size.
- (5) Question not attempted

115. Which one is the complication of trans annular patch in total correction of tetralogy of Fallot ?

- (1) Free pulmonary regurgitation
- (2) Residual gradient
- (3) Aortic regurgitation
- (4) Tricuspid regurgitation
- (5) Question not attempted



116. What is the recommendation for use of trans annular patch ?

- (1) Pulmonary annulus smaller than -3 z value
- (2) Pulmonary annulus of -2 z value
- (3) Pulmonary annulus of larger than -3 z value
- (4) Should be used in all cases
- (5) Question not attempted

117. Optimal timing for arterial switch operation for transposition of great arteries with intact ventricular septum is -

- (1) within 1<sup>st</sup> 2 week
- (2) After 1 month age
- (3) At 2 month age
- (4) At 3-6 month age
- (5) Question not attempted

118. In older patients undergoing total correction for tetralogy of Fallot, following factors increases risk, except

- (1) RV hypertrophy
- (2) Chronic Cyanosis
- (3) Chronic Polycythemia
- (4) Trans annular patch
- (5) Question not attempted

119. Which of the statement about functional capacity of person operated for tetralogy of Fallot is incorrect ?

- (1) Child operated before 5 years of age achieve normal functional capacity in follow-up.
- (2) Child averaging 12 years has subnormal functional capacity.
- (3) Exercise capacity is independent of age at operation.
- (4) RVOT gradient of > 50 mm Hg postoperatively affect functional capacity.
- (5) Question not attempted

120. Following factor contributes maximum to development of right ventricular dysfunction at long-term following complete repair of tetralogy of Fallot :

- (1) Pulmonary regurgitation
- (2) Residual resting RVOT gradient
- (3) Trans ventricular repair
- (4) Muscular resection
- (5) Question not attempted

121. Which condition will not benefit from Fontan operation ?

- (1) Unbalanced AV canal defect
- (2) Right heart hypoplasia
- (3) Tricuspid atresia
- (4) DORV with subaortic VSD
- (5) Question not attempted



122. Which option is suggestive of Restrictive lung disease on spirometry pulmonary function test ?

- (1) Low  $FEV_1$  with normal ratio of  $FEV_1/FVC$ .
- (2) High  $FEV_1$  with normal ratio of  $FEV_1/FVC$ .
- (3) Low FVC with normal ratio of  $FEV_1/FVC$ .
- (4) High FVC with normal ratio of  $FEV_1/FVC$ .
- (5) Question not attempted

123. Compliance of normal lung is –

- (1) 0.1 L/cm  $H_2O$
- (2) 0.2 L/cm  $H_2O$
- (3) 0.3 L/cm  $H_2O$
- (4) 0.4 L/cm  $H_2O$
- (5) Question not attempted

124. Which of the following statement is false about fetal circulation ?

- (1) Fetal circulation is in parallel.
- (2) Fetal circulation is in series.
- (3) The cardiac output in fetus is biventricular output.
- (4) Fetus survive in hypoxic environment.
- (5) Question not attempted

125. What is Bohr effect ?

- (1) There is decrease in oxygen affinity of Hemoglobin when pH of blood falls.
- (2) There is increase in oxygen affinity of Hemoglobin when pH of blood falls.
- (3) There is decrease in oxygen affinity of Hemoglobin when pH of blood rises.
- (4) Oxygen affinity of Hemoglobin does not change with change in blood pH.
- (5) Question not attempted

126. Regarding ventilation/perfusion ratio, which statement is correct ?

- (1) Ventilation/perfusion ratio is low at base and high at apex.
- (2) Ventilation/perfusion ratio is high at base and low at apex.
- (3) Ventilation/perfusion ratio is equal at all lung zones.
- (4) Ventilation/perfusion ratio does not depend on gravity.
- (5) Question not attempted

127. Ventilation/perfusion ratio for the whole lung at rest is \_\_\_\_\_.

- (1) 0.5
- (2) 0.8
- (3) 1.0
- (4) 2.0
- (5) Question not attempted



128. Which statement for myocardial function in neonate is wrong ?

- (1) The myocardium is less compliant than adult.
- (2) Myocardial cells are smaller and round.
- (3) Myofibril content is similar in amount in fetal and adult heart.
- (4) At birth the left ventricle changes from low pressure low output to high pressure chamber.
- (5) Question not attempted

129. Which of the following factors have highest relative risk of developing congenital heart disease in a mother ?

- (1) Diabetes Mellitus
- (2) Smoking
- (3) Febrile illness
- (4) No multivitamin intake
- (5) Question not attempted

130. Which of the following is not true during initiation of cardiopulmonary bypass ?

- (1) There is decrease in systemic vascular resistance.
- (2) Systemic vascular resistance increases.
- (3) The decrease in systemic vascular resistance is the indicator of development of vasoplegic syndrome.
- (4) Methylene blue is used to counter vasoplegic syndrome.
- (5) Question not attempted

131. According to Levine and Freeman's Grading, a palpable systolic murmur with thrill is labelled as -

- (1) Grade I      (2) Grade II
- (3) Grade III    (4) Grade IV
- (5) Question not attempted

132. In which condition Pansystolic murmur is not seen ?

- (1) Aortic stenosis
- (2) Ventricular septal defect
- (3) Mitral regurgitation
- (4) Tricuspid regurgitation
- (5) Question not attempted

133. Graham Steell murmur is seen in which of the following condition ?

- (1) Tricuspid regurgitation
- (2) Aortic stenosis
- (3) Aortic regurgitation
- (4) Pulmonary regurgitation
- (5) Question not attempted

134.  $S_1$  sound is soft in which condition ?

- (1) Short PR interval
- (2) Mitral regurgitation
- (3) Mitral stenosis
- (4) Tricuspid stenosis
- (5) Question not attempted

135. Normal duration of cardiac cycle at heart rate of 75/min. is -

- (1) 0.6 sec.      (2) 0.8 sec.
- (3) 0.9 sec.      (4) 1.0 sec.
- (5) Question not attempted



136. Hypothermia prevents hypoxic injury by all of the following except :

- (1) Depressed release of endothelin-1, a potent vasoconstrictor
- (2) Procoagulant response
- (3) Decreased platelet plugging
- (4) Increased no reflow phenomenon
- (5) Question not attempted

137. Following statements are correct about arterial flow rate on CPB except following :

- (1) In neonates the arterial flow is  $2.5 \text{ l/m}^2$
- (2) Adult require  $2.2 \text{ l/m}^2$
- (3) Patient with  $> 2 \text{ m}^2$  require  $2.0 \text{ l/m}^2$
- (4) At  $30^\circ\text{C}$  the flow requirement is  $1.0 \text{ l/m}^2$
- (5) Question not attempted

138. Which is the most reliable parameter of cellular oxygenation during cardiopulmonary bypass ?

- (1) Systemic venous oxygen
- (2) Pulmonary venous oxygen
- (3)  $\text{VO}_2$
- (4) Flow rate
- (5) Question not attempted

139. Which of the following statement about myocardial metabolism is false ?

- (1) Fetal myocardium uses predominantly glucose.
- (2) After birth shift to fatty acid metabolism is observed.
- (3) Maturing heart cells uses multiple source of energy substrate.
- (4) Adult myocardium use glucose for energy.
- (5) Question not attempted

140. Which of the following structure are formed by proepicardium ?

- (1) Epicardium
- (2) Coronary artery
- (3) Fibroblast
- (4) Myocardium
- (5) Question not attempted

141. Which of the following comment about myocardial calcium sensitivity is false ?

- (1) Neonatal heart has increased affinity to TnC and reduced dissociation from it.
- (2) Mature myocardium has decreased affinity to Tn complex.
- (3) Mature myocardium has increased affinity to Tn complex.
- (4) Myocardial calcium sensitivity is reduced in acidosis.
- (5) Question not attempted



142. Effects of hypothermia on blood physiology includes all except one –
- (1) pH of blood becomes alkaline.
  - (2) Viscosity of blood increases.
  - (3) Platelet function is not affected.
  - (4) Induces vasoconstriction.
  - (5) Question not attempted
143. Normal cerebral blood flow in human is –
- (1) 600 ml/min. (2) 650 ml/min.
  - (3) 700 ml/min. (4) 750 ml/min.
  - (5) Question not attempted
144. The myocardial cells are derived from one of the following precursors
- (1) Mesodermal cells
  - (2) Endodermal cells
  - (3) Ectodermal cells
  - (4) Neural crest
  - (5) Question not attempted
145. Correct arrangement of veins draining into horn of sinus venosus, from lateral to medial is –
- (1) Cardinal vein – Umbilical vein – Vitelline vein
  - (2) Umbilical vein – Cardinal vein – Vitelline vein
  - (3) Vitelline vein – Cardinal vein – Umbilical vein
  - (4) Cardinal vein – Vitelline vein – Umbilical vein
  - (5) Question not attempted
146. Entire cardiovascular system develops from –
- (1) Ectoderm
  - (2) Endoderm
  - (3) Mesoderm
  - (4) Endoderm and Mesoderm
  - (5) Question not attempted
147. Which of the organ is first to develop a resume function in human embryo ?
- (1) Heart (2) Liver
  - (3) Brain (4) Kidney
  - (5) Question not attempted
148. Which structure is formed by right venous valve of sinu-atrial orifice ?
- (1) Right atrium
  - (2) Valve of coronary sinus
  - (3) Smooth part of left atrium
  - (4) Septal leaflet of tricuspid valve
  - (5) Question not attempted
149. AV cushion contributes in development of all of the following, except
- (1) AV valve
  - (2) Central fibrous body
  - (3) Arterial valves
  - (4) Right ventricular apex
  - (5) Question not attempted
150. Which of the aortic arch regresses ?
- (1) First arch (2) Fourth arch
  - (3) Sixth arch (4) Third arch
  - (5) Question not attempted



# रफ कार्य के लिए स्थान / SPACE FOR ROUGH WORK

142. Effects of physiology includes all except one -

- (1) pH of blood becomes alkaline
- (2) Vascularity of blood increases
- (3) Platelet function is not affected
- (4) Induces vasoconstriction
- (5) Question not attempted

143. Normal cerebral blood flow in human is -

- (1) 600 ml/min
- (2) 650 ml/min
- (3) 700 ml/min
- (4) 750 ml/min
- (5) Question not attempted

144. The myocardial cells are derived from one of the following precursors

- (1) Mesodermal cells
- (2) Ectodermal cells
- (3) Ectodermal cells
- (4) Neural crest
- (5) Question not attempted

145. Correct arrangement of veins draining into horn of sinus venosus from lateral to medial is -

- (1) Cardinal vein - Lymphatic vein - Vitelline vein
- (2) Lymphatic vein - Cardinal vein - Vitelline vein
- (3) Vitelline vein - Cardinal vein - Lymphatic vein
- (4) Cardinal vein - Vitelline vein - Lymphatic vein
- (5) Question not attempted

147. Which of the organ is first to develop a reserve function in human embryo?

- (1) Heart
- (2) Liver
- (3) Brain
- (4) Kidney
- (5) Question not attempted

148. Which structure is formed by right venous valve of sinus venosus?

- (1) Right auricle
- (2) Valve of coronary sinus
- (3) Smooth part of left aurium
- (4) Septal leaflet of tricuspid valve
- (5) Question not attempted

149. AV cushion contributes in development of all of the following except

- (1) AV valve
- (2) Central fibrous body
- (3) Atrial valves
- (4) Right ventricular apex
- (5) Question not attempted

150. Which of the aortic arch regresses?

- (1) First arch
- (2) Fourth arch
- (3) Sixth arch
- (4) Third arch
- (5) Question not attempted

